ORDER NO. HAD8804127C9

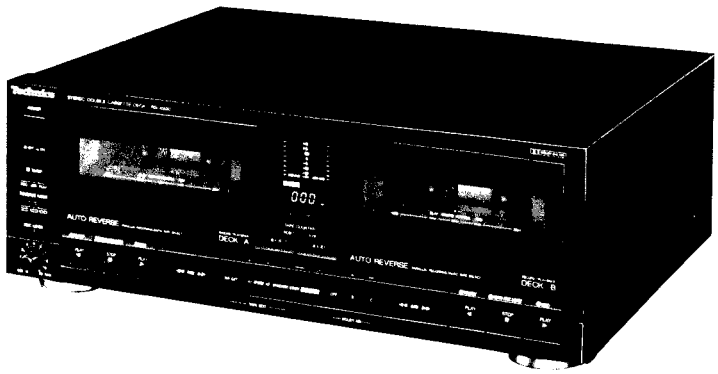
Service Manual

Cassette Deck

RS-X990

Dolby B • C NR-Equipped
Stereo Double Cassette Deck

DOLBY B-C NR*



Color

(K)...Black Type

Area

Color	Area
(K)	(E).....Continental Europe.
(K)	(EK).....United Kingdom.
(K)	(EG).....F.R. Germany.
(K)	(EH).....Holland.
(K)	(XA).....Asia, Latin America, Middle Near East, Africa and Oceania.
(K)	(XL).....Australia.
(K)	(XB).....Saudi Arabia.
(K)	(PA).....Far East PX.
(K)	(PE).....European Military.

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system Stereo cassette deck
Track system 4-track, 2-channel
Heads
(DECK A) REC/PLAY Solid Permalloy head
Erasing Double-gap ferrite head
(DECK B) REC/PLAY Solid Permalloy head
Erasing Double-gap ferrite head
Motors
(DECK A) Capstan/reel table drive
2 speed electronically controlled DC motor
(DECK B) Capstan/reel table drive
2 speed electronically controlled DC motor
Recording system AC bias
Bias frequency 77kHz
Erasing system AC erase
Tape speed 4.8cm/sec. (1-7/8ips)
Frequency response (w/o Dolby N.R.)
METAL 30Hz~18kHz
40Hz~17kHz (DIN)
CrO_2 30Hz~17kHz
40Hz~16kHz (DIN)
NORMAL 30Hz~16kHz
40Hz~15kHz (DIN)
S/N (signal level=max recording level, CrO_2 type tape)
DOLBY C NR on 74dB (CCIR)
DOLBY B NR on 66dB (CCIR)
NR off 56dB (A weighted)

Wow and flutter 0.07% (WRMS)
±0.2% (DIN)
Fast Forward and Rewind Time
Approx. seconds with C-60 cassette tape
Input sensitivity and impedance
LINE 85mV/70kΩ
Output voltage and impedance
LINE 400mV/1.5kΩ

■ GENERAL

Power consumption 26W
Power supply
For continental Europe AC 50Hz/60 Hz, 220V
For United Kingdom and others
AC 50Hz/60Hz, 110V/127V/220V/240V
Dimensions (W × H × D) 360 × 128 × 285mm
(14-3/16" × 5-1/32" × 11-7/32")
Weight 5.0kg (11 lb.)

Note:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

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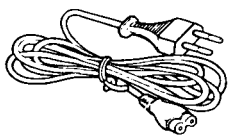
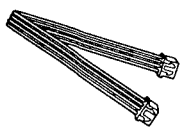
■ ACCESSORIES

• AC power supply cord ... 1

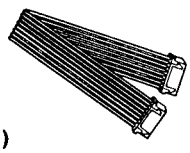


SFDAC05E03 (E, EH, EG)
SJA168 (XA, PA, PE)
SJA173 (XL)
SJA183 (XB)
SJA188 (EK)

• 4-core flat cables 1

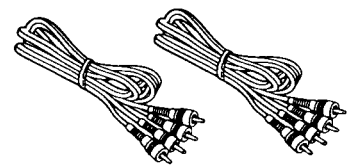


• 8-core flat cables 1



(SWKSX990E1)

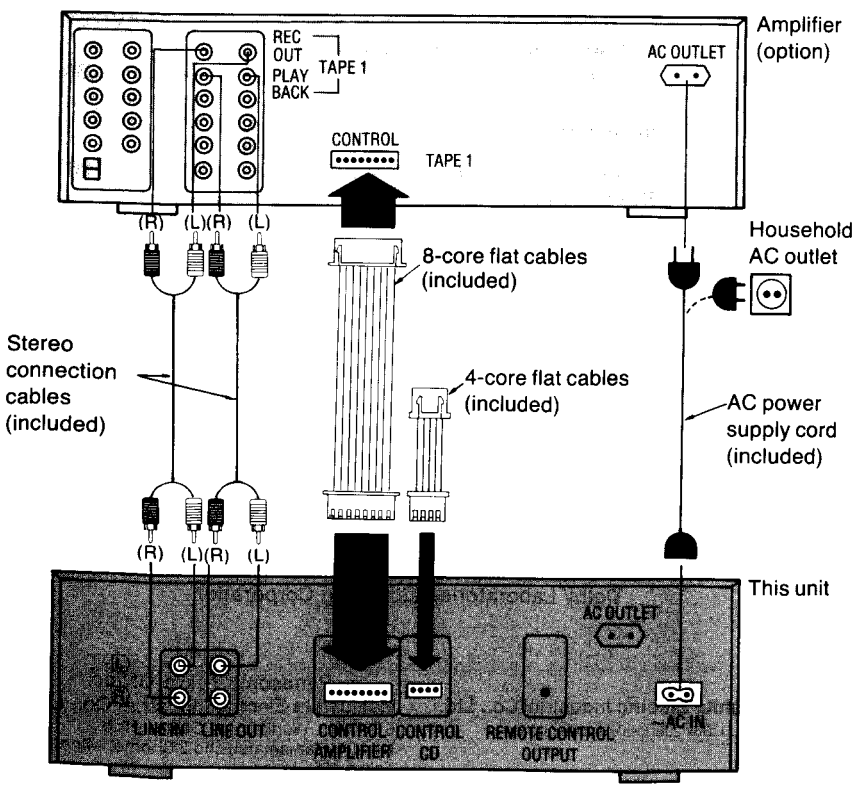
• Stereo connection cables..... 2



(SJPK2202)

• **AC plug** ..... 1 **RJP120ZBS-H (XA, XB, PA, PE)**

■ HOW TO CONNECT



Notes:

- **Remote control output terminal (REMOTE CONTROL OUTPUT):**
  This terminal can be used only with Technics graphic equalizer or compact disc player having a remote control terminal.
  (Refer to the operating instructions of the amplifier.)
- **AC outlet:**
  Do not exceed the indicated power rating when connecting to this outlet.
- **8-core flat cables:**
  For Technics amplifier model SU-X990D, SU-X980D only.
- **4-core flat cables:**
  For Technics compact-disc player's control jack (for SL-PJ45, etc.)
- The configurations of the AC outlets and AC power supply cord differs according to area.

■ LOCATION OF CONTROLS

● Timer stand-by switch (◷ TIMER)
This switch is to be used in order to perform a timer recording or timer playback operation.

● Power switch (POWER)

When using "DECK A"

● Cassette holder

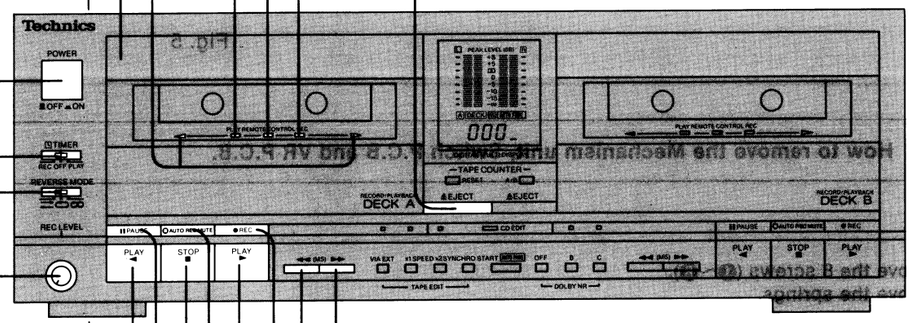
● Direction indicators
▶: forward side (the cassette side facing outward)
◀: reverse side

● Playback indicator (PLAY)

● Remote-control operation indicator (REMOTE CONTROL)
During remote control operation, the indicator on the deck selected for use will be illuminated.

● Recording indicator (REC)

● Eject button (▲EJECT)



● Fast-forward/rewind button (MS/▶▶)
Press this button for fast forward and rewind, or for tune search during playback.

● Rewind/fast-forward button (MS/◀◀)
Press this button for rewind and fast forward, or for tune search during playback.

● Record button (● REC)

● Forward-side playback button (PLAY/▶)

● Record-muting button (▢ AUTO REC MUTE)
If this button is pressed while a recording is in progress, a blank space on the tape will result.

● Stop button (STOP/■)

● Pause button (❚❚ PAUSE)

● Reverse-side playback button (PLAY/◀)

● Recording level control (REC LEVEL)
Used to adjust the recording level.

● Reverse mode selector (REVERSE MODE)

Automatic-fade indicator (AUTO FADE)

● Level meters (PEAK LEVEL)
During recording, these meters indicate the recording level. The level is adjusted by using the recording level control. During playback, they indicate the level of the recorded sound.

DECK A/B tape counter indicators (A DECK B)

Tape counter
This indicates the amount of tape travel.

Deck A/B tape counter display-select button (A/B)
This button can be used to select the tape counter display for either "DECK A" or "DECK B".

Counter reset button (RESET)

CD edit-recording indicator (CD EDIT)

When using "DECK B"

Direction indicators

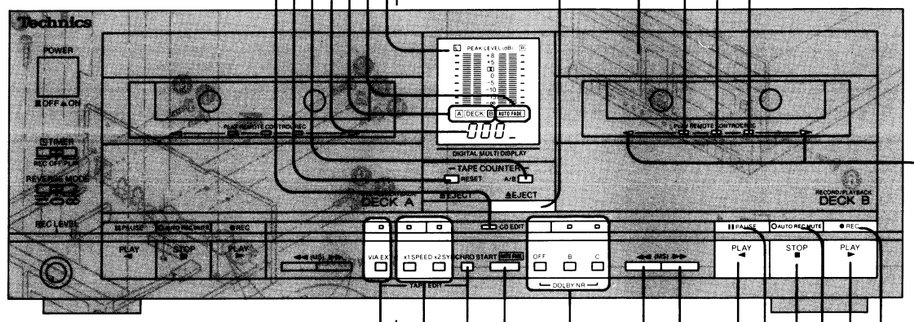
Cassette holder

● Playback indicator (PLAY)

● Remote-control operation indicator (REMOTE CONTROL)

Eject button (▲EJECT)

● Recording indicator (REC)



Via-external-component edit-recording button/indicator (VIA EXT)
Press this button when you want to vary the tone quality (by using an amplifier and/or graphic equalizer), or to make a microphone-mix recording, while making an edit-recording.

Edit-recording tape-speed selector/ indicator (SPEED)
Press to select the tape speed for edit-recording.

Synchro-start button (SYNCHRO START)

Automatic-fade button (AUTO FADE)

Dolby noise-reduction switches/ indicators (DOLBY NR)

Rewind/fast-forward button (MS/◀◀)

Fast-forward/rewind button (MS/▶▶)

Reverse side-playback button (PLAY/◀)

Pause button (❚❚ PAUSE)

Stop button (STOP/■)

Record-muting button (▢ AUTO REC MUTE)

Forward-side playback button (PLAY/▶)

Record button (● REC)

■ DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	How to remove the Cabinet.
Procedure 1	• Remove the 6 screws (❶~❻).

1. Remove the 6 screws (❶~❻), and then remove the Cabinet.

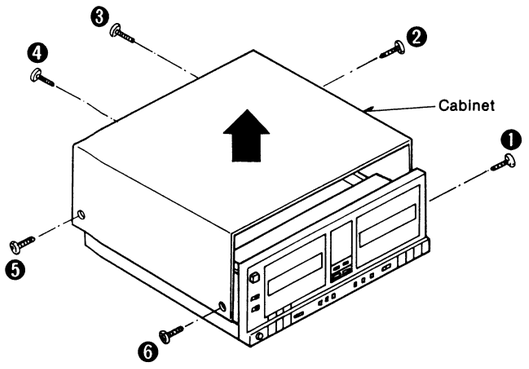


Fig. 1

Ref. No. 2	How to remove the Main P.C.B.
Procedure 1→2	

1. Remove the 15 screws (❶~⓯, ㉒).
2. Remove the Rear panel in the direction of arrow, and then remove the Main P.C.B.

Note: How to remove the AC outlet.
• Remove the AC outlet by using a screwdriver.

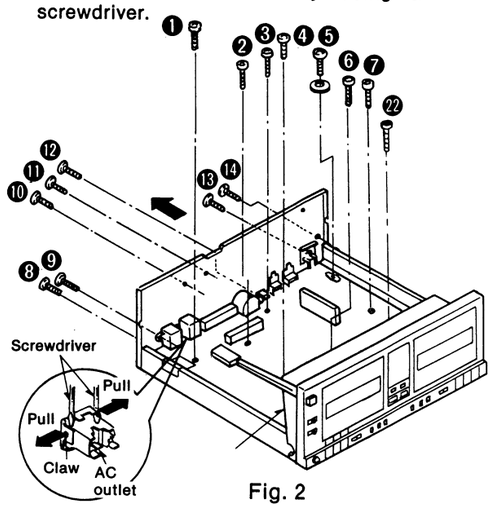


Fig. 2

How to check the Main P.C.B.

• When checking the soldered surfaces of Main P.C.B. and replacing the parts, do as show.

1. Remove the 11 screws (❶~❽, ⓬, ⓮, ㉒), and then remove the Main P.C.B. (See Fig. 2)
2. Remove the 7 screws (⓯~㉑), and then remove the Bottom board. (See Fig. 3)

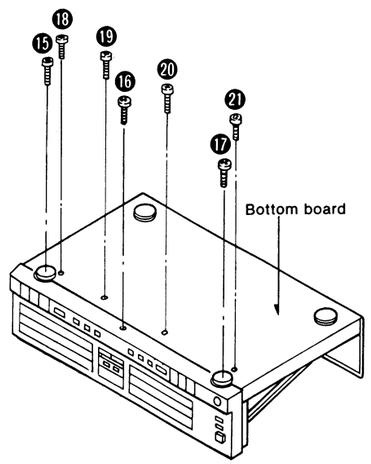


Fig. 3

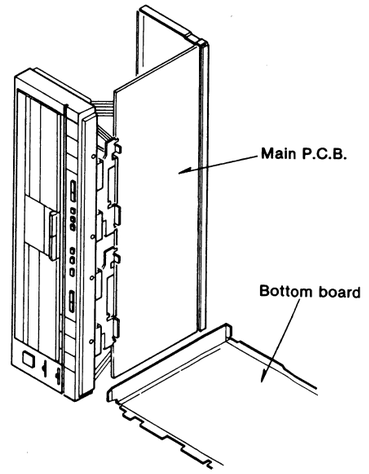


Fig. 4

Ref. No. 3	How to remove the Front panel ass'y.
Procedure 1→3	

1. Remove the 7 screws (❶~❼), and then remove the Front panel ass'y.

Note: If the mechanism stops in play state while the tape is running, the head PCB is lifted and stuck, and the cassette lid will not open if the eject button is pressed. In such a case, turn the main gear by head, or apply a DC 12V power directly to capstan motor ⊕ and ⊖ terminals from the power supply jig (SZZA1047F). Then the head PCB is lowered, and the mechanism comes into stop state, so that eject operation is enabled.

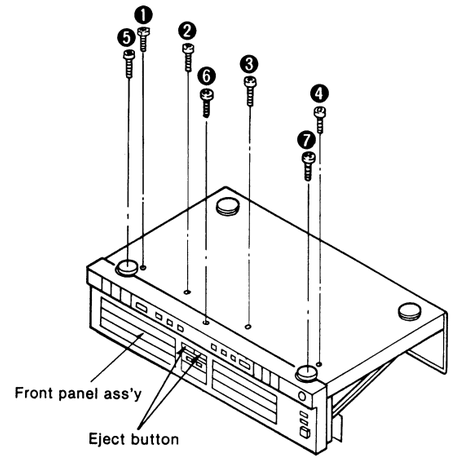


Fig. 5

Ref. No. 4	How to remove the Mechanism unit, Switch P.C.B and VR P.C.B.
Procedure 1→3→4	

1. Remove the 8 screws (❶~❽).
2. Remove the springs.
3. Push the Eject button, and then remove the Mechanism units (Deck A•B) in the direction of arrow.
4. Remove the one screw (❾), and then remove the Switch P.C.B.
5. Remove the 2 screws (❿, ⓫).
6. Release the 5 tabs, and then remove the Front panel in the direction of arrow.
7. Remove the Rec. level control Knob and Nut, and then remove the VR P.C.B.

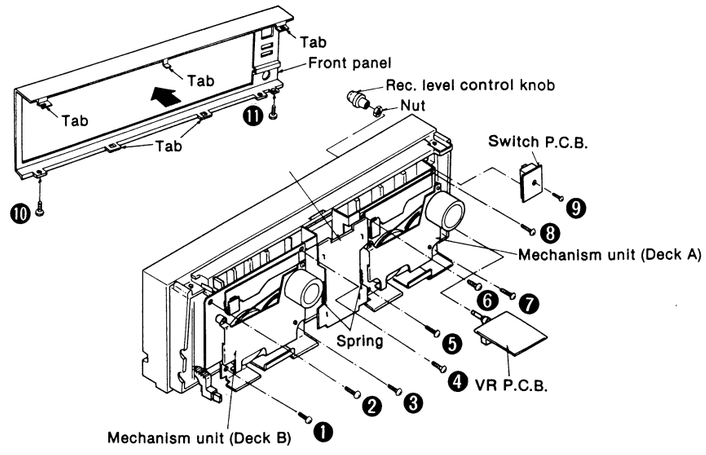


Fig. 6

Ref. No. 5	How to remove the Meter P.C.B. and Operation P.C.B.
Procedure 1→3→4 →5	

1. Remove the 2 screws (❶, ❷), and then remove the Meter P.C.B. (See Fig. 7)
2. Remove the 3 screws (❸~❺), and 4 tabs, and then remove the Ornament panel in the direction of arrow. (See Fig. 8)
3. Release the 9 tabs of Ornament panel, and then remove the Operation P.C.B. (See Fig. 9)

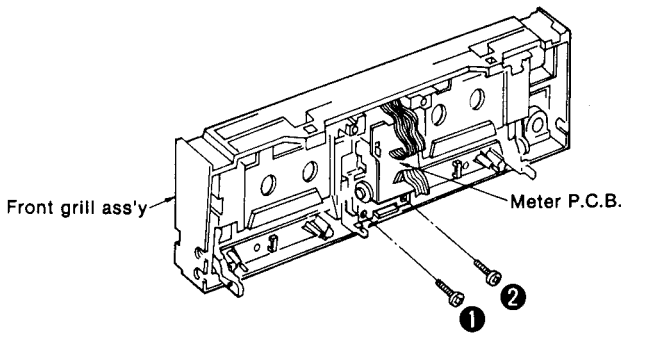


Fig. 7

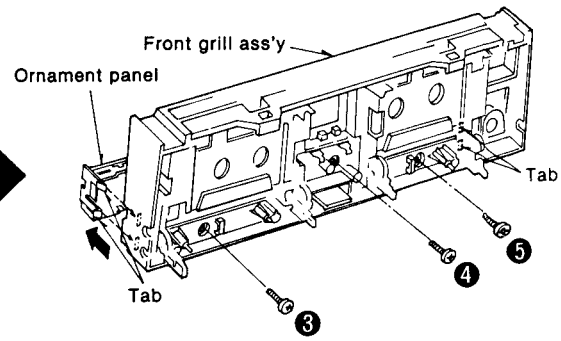


Fig. 8

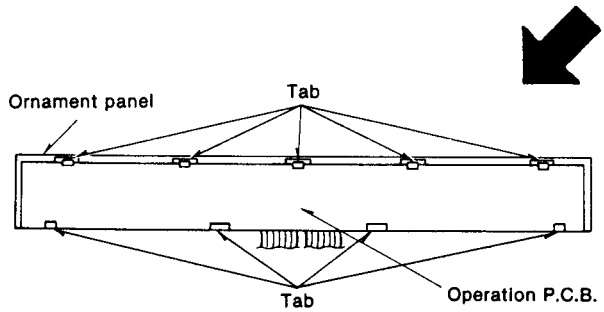


Fig. 9

Ref. No. 6	How to remove the LED block ass'y
Procedure 6	

1. Push the Eject button.
2. Remove the Cassette lid in the direction of arrow.
3. Remove the LED block ass'y.

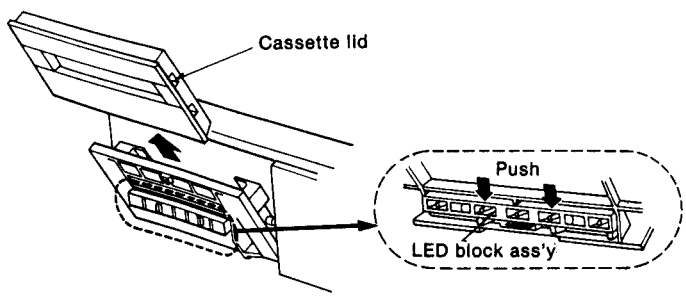


Fig. 10

■ MEASUREMENT AND ADJUSTMENT METHODES

Measurement Condition

- Rec. level control; Maximum
- **Timer stand-by switch; Off**
- **Dolby NR switch; Off**
- **Editing tape-speed selector; X1**
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20±5°C(68±9°F)

Measuring instrument

- EVM(Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator
- ATT(Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
  Normal reference blank tape;QZZCRA
  CrO_2 reference blank tape; QZZCRX
  Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjusment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.
3. **After the adjustment, apply screwlock to the azimuth adjusting screw.**

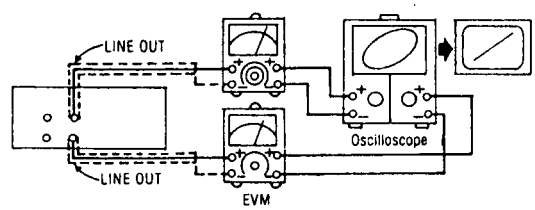


Fig. 1

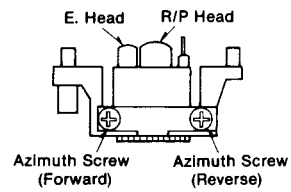


Fig. 2

TAPE SPEED ADJUSTMENT (DECK A/B)

High speed

1. Shift the editing tape speed switch to "**X2**".
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust Deck B=**VR804** and Deck A=**VR803** so that the output is within the standard value.

Normal speed

4. Shift the editing tape-speed selector to "**X1**".
5. Playback the middle portion of the test tape (QZZCWAT).
6. Adjust Deck B=**VR802** and Deck A=**VR801** so that the output is within the standard value.

Standard value: 3000±15Hz (Normal), 6000±30Hz (High)

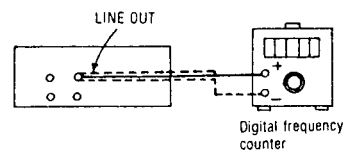


Fig. 3

PLAYBACK GAIN ADJUSTMENT (DECK A/B)

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck B=**VR1** (L-CH) [[**VR2** (R-CH)]] and Deck A=**VR3** (L-CH) [[**VR4** (R-CH)]] so that the output is within the standard value.

Standard value: 0.4V±0.5dB

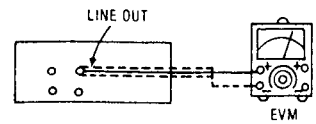


Fig. 4

PLAYBACK FREQUENCY RESPONSE (DECK A/B)

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, −20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in **Fig. 6** for both L-CH and R-CH.

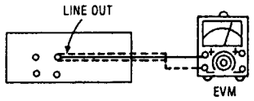


Fig. 5

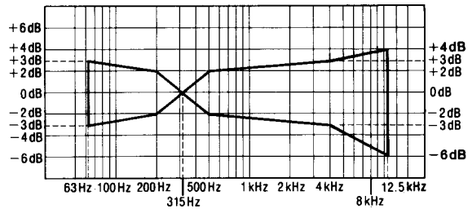


Fig. 6

ERASE CURRENT ADJUSTMENT (DECK A/B)

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Adjust Deck B=**VR301** and Deck A=**VR302** so that the output between Deck B=**TP1** and GND, Deck A=**TP2** and GND is within the standard value.

Standard value: 170±5mA (Metal), (170±5mV)

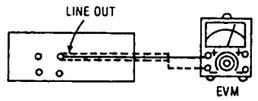


Fig. 7

OVERALL FREQUENCY RESPONSE (DECK A/B)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1kHz, −24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in **Fig. 9** in comparison to the reference frequency (1kHz).
6. If it is not within the standard range, adjust Deck B=**VR9** (L-CH) and **VR10** (R-CH), Deck A=**VR11** (L-CH) and **VR12** (R-CH) so that the frequency level is within the standard range.
7. Repeat steps 2~6 above using the CrO_2 tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
8. Assure that the level is within the range shown in **Fig. 10.**

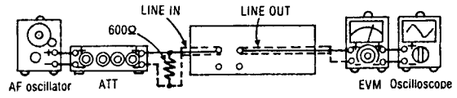


Fig. 8

Normal Overall frequency response chart (NR OUT)

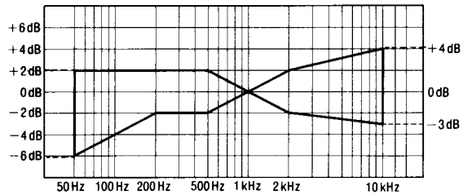


Fig. 9

CrO_2 Metal Overall frequency response chart (NR OUT)

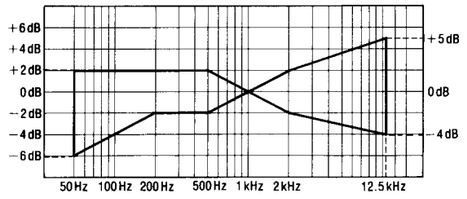


Fig. 10

OVERALL GAIN ADJUSTMENT (DECK A/B)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1kHz, −24dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust Deck B=**VR5** (L-CH) and **VR6** (R-CH), Deck A=**VR7** (L-CH) and **VR8** (R-CH).
6. Repeat the step 2~5 above until the output is within the standard value.

Standard value: 0V±0.5dB

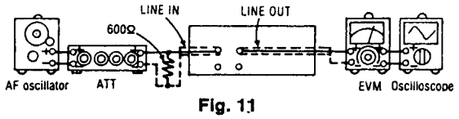


Fig. 11

FLUORESCENT METER ADJUSTMENT

1. Insert the Normal blank test tape(QZZCRA) and apply a reference input signal (1 kHz, -24 dB) in the Record Pause mode.
2. Using an attenuator, adjust until the voltage of the tape decks "LINE OUT" terminals is 0.4V.
3. **Adjust VR701 (L-CH) and VR702 (R-CH) so that the "0dB" segment is slightly illuminated.**

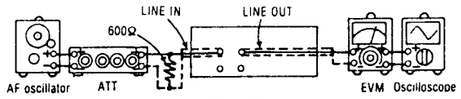


Fig. 12

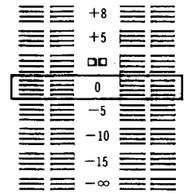
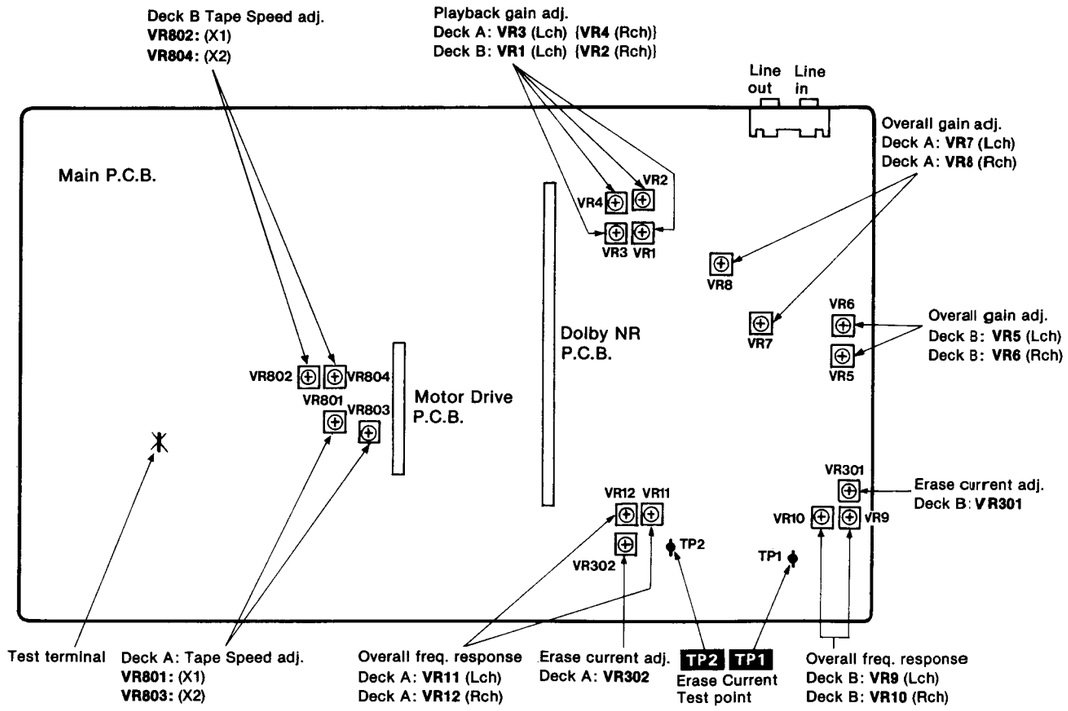
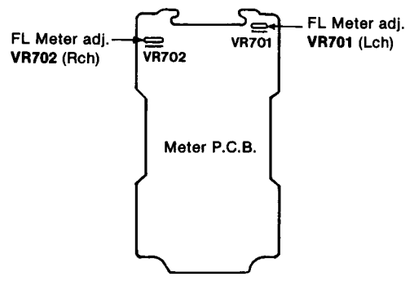


Fig. 13

• Adjustment Points





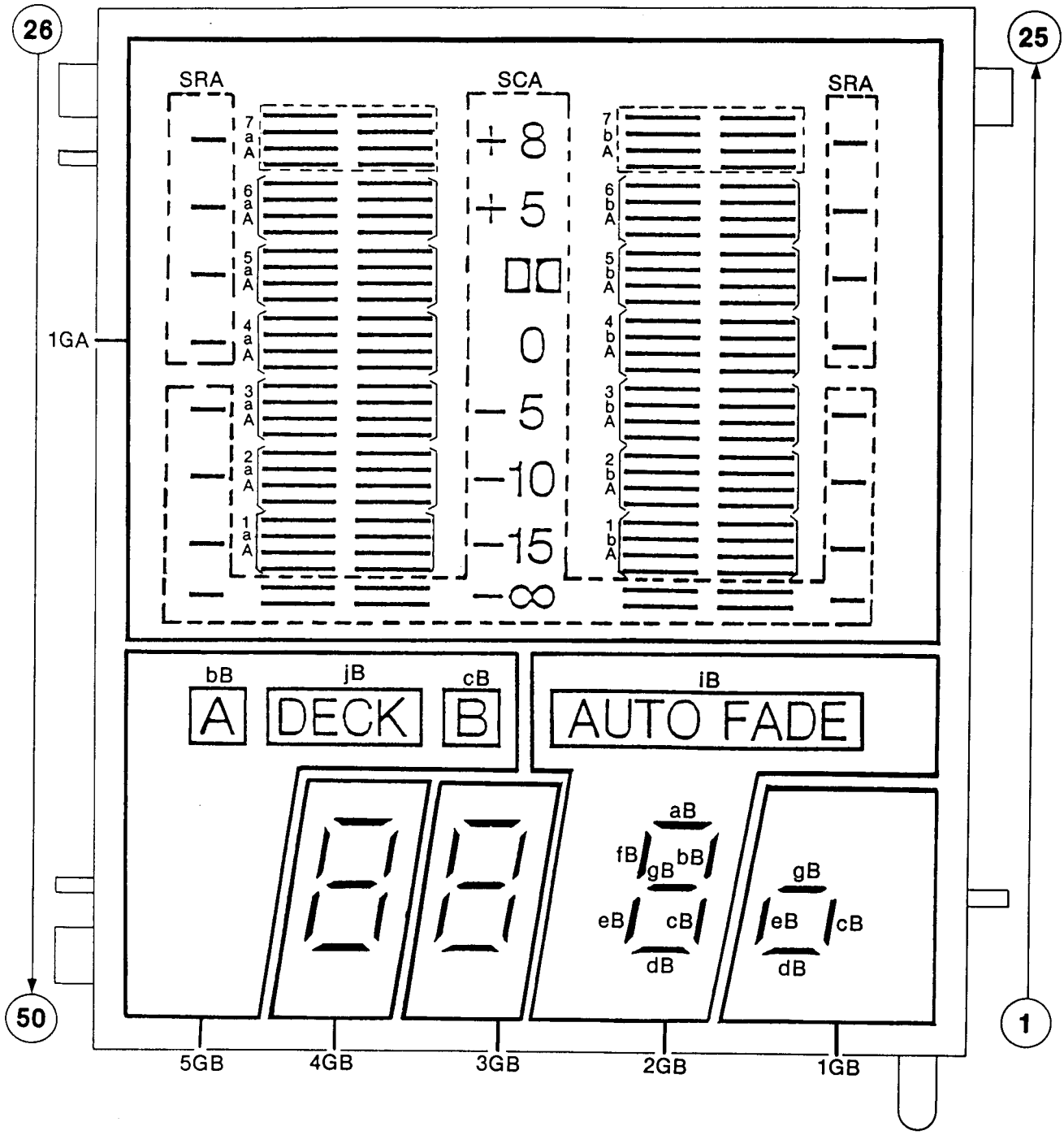
■ MICROCOMPUTER TERMINAL FUNCTION
(IC902: M50746-411SP)

Pin No.	Symbol	In/Out	Description of terminal
1	V_{CC}	———	Power supply terminal
2	A V_{SS}	———	• Connected to V_{SS}.
3	V_{REF}	———	Standard voltage terminal
4	D-A	Input	Music select detection
5	PWM	Input	Rec. Volume control
6	$P6_3$	Output	Deck A Rec. LED display
7	$P6_2$	Output	Deck B Rec. LED display
8	$P6_1$	Output	Deck A Bias OSC control
9	$P6_0$	Output	Deck B Bias OSC control
10	AN_7	Input	Rec. Volume control input terminal
11	AN_6	Input	Rec. Level control input terminal
12	AN_5	Input	Key switch scan (Deck A: Stop, F.F., Rew., F. Play, R. Play, Rec., Pause, Auto fade, Synchro start, Edit-recording tape speed, VIA EXT.)
13	AN_4	Input	Key switch scan (Deck B: Stop, F.F., Rew., F. Play, R. Play, Rec., Pause, Dolby B • C, NR off, Timer start, Counter reset, Deck A/B tape counter display)
14	$P4_3$	Output	LINE OUT mute control • "L" level in PLAY mode. • "H" level in other mode.
15	$P4_2$	Output	Muting control
16	$P4_1$	Output	Deck A Rec. mute control
17	$P4_0$	Output	Deck B Rec. mute control
18	$P3_7$	Output	Meter mute control
19	$P3_6$	Output	Direct operation signal
20	$P3_5$	Output	CD edit-recording mode
21	$P3_4$	Output	CD edit-recording end detection
22	$P3_3$	Output	Deck A Solenoid control
23	$P3_2$	Output	Deck B Solenoid control
24	$P3_1$	Output	Deck A Capstan motor speed control
25	$P3_0$	Output	Deck B Capstan motor speed control

Pin No.	Symbol	In/Out	Description of terminal
26	INT1	Input	Power supply off detection
27	CN V_{SS}		Connected to V_{SS}.
28	$\overline{RESET}$	Input	Reset terminal
29	X_{IN}	Input	Clock OSC terminal
30	X_{OUT}	Output	
31	ϕ	———	Not used in this unit.
32	V_{SS}	———	GND terminal
33	$P5_7$	Input	Remote control serial signal
34	$P5_6$	Input	Deck B Rec. muting
35	$P5_5$	Input	Deck A Rec. muting
36	$P5_4$	Input	Reading of Key Scan input (CD edit, Synchro start, MS detect)
37	$P5_3$	Input	Reading of Key Scan input (Reverse mode (∞), Test)
38	$P5_2$	Input	Reading of Key Scan input (Reverse mode (⇄), Deck A • B R. Rec. inhibit, Deck B reel pulse)
39	$P5_1$	Input	Reading of Key Scan input (Timer (play), Deck A • B F. Rec. inhibit, Deck B leade tape detect)
40	$P5_0$	Input	Reading of Key Scan input (Timer (rec.), Deck A • B direction detection, Deck A leade tape detect, Deck A reel pulse)
41	$P1_7$	Output	Audio IC select control • "L" level in Deck A Playback and Cue/Rev. mode. • "H" level in other mode.
42	$P1_6$	Output	Rec. • Playback equalizer speed select and Tape speed (X2) display • "L" level in tape speed is X2 mode. • "H" level in other mode.
43	$P1_5$	Output	Editing tape speed (X1) LED display • "L" level in Editing tape speed (X1) mode. • "H" level in other mode.
44	$P1_4$	Output	Rec. input select control and VIA EXT LED display
45	$P1_3$	Output	Dolby NR select • "L" level in Dolby C NR mode. • "H" level in other mode.

Pin No.	Symbol	In/Out	Description of terminal
46	$P1_2$	Output	Dolby NR select • "L" level in Dolby B NR mode. • "H" level in other mode.
47	$P1_1$	Output	Dolby Encode/Decode select • "L" level in Line in recording mode. • "H" level in other mode.
48	$P1_0$	Output	Remote control Deck A/B select
49	$P0_7$	Output	Serial data signal
50	$P0_6$	Output	LED display serial data signal
51	$P0_5$	Output	Counter display serial data signal
52 53 54 55 56	$P0_4$ $P0_3$ $P0_2$ $P0_1$ $P0_0$	Output	Key Scan Output
57	$P2_7$	Output	Deck B Plunger control
58	$P2_6$	Output	Deck B Reel motor control (reverse side)
59	$P2_5$	Output	Deck B Reel motor control (forward side)
60	$P2_4$	Output	Deck B Capstan motor control
61	$P2_3$	Output	Deck A Plunger control
62	$P2_2$	Output	Deck A Reel motor control (reverse side)
63	$P2_1$	Output	Deck A Reel motor control (forward side)
64	$P2_0$	Output	Deck A Capstan motor control

■ DESCRIPTION OF FL PANEL



Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	NP			iB	hB	1GA, SCA	1bA	2bA	3bA	4bA	5bA	6bA	7bA	SRA	NP

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
NP								F1				NP	7aA	6aA	5aA	4aA	3aA	2aA	1aA	1GB

37	38	39	40	41	42	43	44	45	46	47	48	49	50
2GB	3GB	4GB	5GB, jB	aB	bB	cB	dB	eB	fB	gB	NP	F2	

■ RESISTORS & CAPACITORS

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System of Resistor

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)

ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Peculiarity

ECEA	50	M	330
Type	Voltage (50V)	Pecliarity	Value (33μF)

- Capacity are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Cip Resistor			
ERJ : Cip Resistor			

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 −20 %
ECQM : Poyester	50 : 50V	05 : 50V	J : ±5%
ECQP : Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG : Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N : Non Polar Electrolytic	KC : 400V AC		C : ±0.25pF
QCU : Ceramic (Chip Type)	KC : 125V AC (UL)		D : ±0.5pF
ECUX : Ceramic (Chip Type)			
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R1	ERDS2TJ101	100 1/4
R2	ERDS2TJ101	100 1/4
R3	ERDS2TJ101	100 1/4
R4	ERDS2TJ101	100 1/4
R5	ERDS2TJ225	2.2M 1/4
R6	ERDS2TJ225	2.2M 1/4
R7	ERDS2TJ225	2.2M 1/4
R8	ERDS2TJ225	2.2M 1/4
R9	ERDS2TJ101	100 1/4
R10	ERDS2TJ101	100 1/4
R11	ERDS2TJ101	100 1/4
R12	ERDS2TJ101	100 1/4
R13	ERDS2TJ820	82 1/4
R14	ERDS2TJ820	82 1/4
R15	ERDS2TJ332	3.3K 1/4
R16	ERDS2TJ332	3.3K 1/4
R17	ERDS2TJ272	2.7K 1/4
R18	ERDS2TJ272	2.7K 1/4
R19	ERDS2TJ152	1.5K 1/4
R20	ERDS2TJ152	1.5K 1/4
R21	ERDS2TJ272	2.7K 1/4
R22	ERDS2TJ272	2.7K 1/4
R23	ERDS2TJ223	22K 1/4
R24	ERDS2TJ223	22K 1/4
R25	ERDS2TJ472	4.7K 1/4
R26	ERDS2TJ472	4.7K 1/4
R27	ERDS2TJ183	18K 1/4
R28	ERDS2TJ183	18K 1/4
R29	ERDS2TJ225	2.2M 1/4
R30	ERDS2TJ225	2.2M 1/4
R31	ERDS2TJ223	22K 1/4
R32	ERDS2TJ223	22K 1/4
R33	ERDS2TJ472	4.7K 1/4
R34	ERDS2TJ472	4.7K 1/4
R35	ERDS2TJ222	2.2K 1/4
R36	ERDS2TJ222	2.2K 1/4
R37	ERDS2TJ330	33 1/4
R38	ERDS2TJ330	33 1/4
R39	ERDS2TJ472	4.7K 1/4
R40	ERDS2TJ472	4.7K 1/4
R41	ERDS2TJ223	22K 1/4
R42	ERDS2TJ223	22K 1/4
R43	ERDS2TJ102	1K 1/4
R44	ERDS2TJ102	1K 1/4
R45	ERDS2TJ332	3.3K 1/4
R46	ERDS2TJ332	3.3K 1/4
R47	ERDS2TJ472	4.7K 1/4
R48	ERDS2TJ472	4.7K 1/4
R49	ERDS2TJ682	6.8K 1/4
R50	ERDS2TJ682	6.8K 1/4
R51	ERDS2TJ472	4.7K 1/4
R52	ERDS2TJ472	4.7K 1/4
R53	ERDS2TJ102	1K 1/4
R54	ERDS2TJ102	1K 1/4
R55	ERDS2TJ330	33 1/4
R56	ERDS2TJ330	33 1/4
R57	ERDS2TJ472	4.7K 1/4
R58	ERDS2TJ472	4.7K 1/4
R59	ERDS2TJ222	2.2K 1/4
R60	ERDS2TJ222	2.2K 1/4
R61	ERDS2TJ103	10K 1/4
R62	ERDS2TJ103	10K 1/4
R63	ERDS2TJ103	10K 1/4
R64	ERDS2TJ103	10K 1/4
R65	ERDS2TJ472	4.7K 1/4
R66	ERDS2TJ472	4.7K 1/4
R67	ERDS2TJ472	4.7K 1/4
R68	ERDS2TJ472	4.7K 1/4
R69	ERDS2TJ562	5.6K 1/4
R70	ERDS2TJ562	5.6K 1/4
R71	ERDS2TJ104	100K 1/4
R72	ERDS2TJ104	100K 1/4
R73	ERDS2TJ152	1.5K 1/4
R74	ERDS2TJ152	1.5K 1/4
R75	ERDS2TJ682	6.8K 1/4
R76	ERDS2TJ682	6.8K 1/4
R77	ERDS2TJ682	6.8K 1/4
R78	ERDS2TJ682	6.8K 1/4
R83	ERDS2TJ331	330 1/4
R84	ERDS2TJ331	330 1/4
R85	ERDS2TJ102	1K 1/4
R86	ERDS2TJ102	1K 1/4
R107	ERDS2TJ154	150K 1/4
R108	ERDS2TJ154	150K 1/4
R111	ERDS2TJ472	4.7K 1/4
R112	ERDS2TJ472	4.7K 1/4
R113	ERDS2TJ472	4.7K 1/4
R114	ERDS2TJ472	4.7K 1/4
R115	ERDS2TJ272	2.7K 1/4
R116	ERDS2TJ272	2.7K 1/4
R203	ERDS2TJ473	47K 1/4
R204	ERDS2TJ683	68K 1/4
R205	ERDS2TJ273	27K 1/4
R206	ERDS2TJ123	12K 1/4
R207	ERDS2TJ153	15K 1/4
R208	ERDS2TJ822	8.2K 1/4
R209	ERDS2TJ103	10K 1/4
R210	ERDS2TJ103	10K 1/4
R211	ERDS2TJ104	100K 1/4
R212	ERDS2TJ104	100K 1/4
R213	ERDS2TJ473	47K 1/4
R214	ERDS2TJ223	22K 1/4
R215	ERDS2TJ225	2.2M 1/4
R216	ERDS2TJ225	2.2M 1/4
R217	ERDS2TJ103	10K 1/4
R218	ERDS2TJ103	10K 1/4
R219	ERDS2TJ101	100 1/4
R301	ERDS2TJ1R0	1 1/4
R302	ERDS2TJ1R0	1 1/4
R303	ERDS2TJ683	68K 1/4
R304	ERDS2TJ683	68K 1/4
R305	ERDS2TJ683	68K 1/4
R306	ERDS2TJ683	68K 1/4
R307 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ100	10 1/4
R307 (EK, XL)	ERDS2TJ8R2	8.2 1/4
R308 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ100	10 1/4
R308 (EK, XL)	ERDS2TJ8R2	8.2 1/4

Ref. No.	Part No.	Value.
R309 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ100	10 1/4
R309 (EK, XL)	ERDS2TJ8R2	8.2 1/4
R310 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ100	10 1/4
R310 (EK, XL)	ERDS2TJ8R2	8.2 1/4
R311	ERDS2TJ561	560 1/4
R312	ERDS2TJ561	560 1/4
R313	ERDS2TJ221	220 1/4
R314	ERDS2TJ221	220 1/4
R315	ERDS2TJ391	390 1/4
R316	ERDS2TJ391	390 1/4
R317	ERDS2TJ683	68K 1/4
R318	ERDS2TJ683	68K 1/4
R319	ERDS2TJ221	220 1/4
R320	ERDS2TJ221	220 1/4
R321	ERDS2TJ331	330 1/4
R322	ERDS2TJ331	330 1/4
R401	ERDS2TJ242	2.4K 1/4
R402	ERDS2TJ242	2.4K 1/4
R403	ERDS2TJ562	5.6K 1/4
R404	ERDS2TJ562	5.6K 1/4
R405	ERDS2TJ332	3.3K 1/4
R406	ERDS2TJ332	3.3K 1/4
R407	ERDS2TJ102	1K 1/4
R408	ERDS2TJ102	1K 1/4
R409	ERDS2TJ333	33K 1/4
R410	ERDS2TJ333	33K 1/4
R411	ERDS2TJ823	82K 1/4
R412	ERDS2TJ823	82K 1/4
R413	ERDS2TJ471	470 1/4
R414	ERDS2TJ471	470 1/4
R415	ERDS2TJ512	5.1K 1/4
R416	ERDS2TJ512	5.1K 1/4
R417	ERDS2TJ683	68K 1/4
R418	ERDS2TJ683	68K 1/4
R419	ERDS2TJ222	2.2K 1/4
R420	ERDS2TJ222	2.2K 1/4
R421	ERDS2TJ823	82K 1/4
R422	ERDS2TJ823	82K 1/4
R423	ERDS2TJ331	330 1/4
R424	ERDS2TJ331	330 1/4
R425	ERDS2TJ101	100 1/4
R426	ERDS2TJ101	100 1/4
R601	ERDS2TJ392	3.9K 1/4
R602	ERDS2TJ472	4.7K 1/4
R605	ERDS2TJ471	470 1/4
R606	ERDS2TJ102	1K 1/4
R607 (E, EG, EH, XA) (XB, PA, PE)	ERDS1FJ2R2	2.2 1/2
R607 (EK, XL)	ERQ16NKR68E	0.68 1
R608	ERDS1FJ100	10 1/2
R609 (E, EG, EH, XA) (XB, PA, PE)	ERDS1FJ270	27 1/2
R609 (EK, XL)	ERD2FCG270	27 1/4
R610	ERDS2TJ102	1K 1/4
R611 (EK, XL)	ERDS1FJ560	56 1/2
R611 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ270	27 1/4
R612 (EK, XL)	ERDS1FJ560	56 1/2
R612 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ270	27 1/4
R613 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ270	27 1/4
R614 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ270	27 1/4
R616	ERDS2TJ392	3.9K 1/4
R617 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ470	47 1/4
R617 (EK, XL)	ERD2FCG470	47 1/4
R618 (E, EG, EH, XA) (XB, PA, PE)	ERDS2TJ330	33 1/4
R618 (EK, XL)	ERD2FCG330	33 1/4
R619	ERDS2TJ102	1K 1/4
R620	ERDS2TJ561	560 1/4
R621 (EK, XL)	ERDS2TJ560	56 1/4
R622 (EK, XL)	ERDS2TJ560	56 1/4
R623 (EK, XL)	ERD2FCG180	18 1/4
R624 (EK, XL)	ERQ16NKR10E	0.1 1
R625 (EK, XL)	ERQ16NKR10E	0.1 1
R700	ERDS2TJ821	820 1/4
R701	ERDS2TJ102	1K 1/4
R702	ERDS2TJ122	1.2K 1/4
R703	ERDS2TJ152	1.5K 1/4
R704	ERDS2TJ182	1.8K 1/4
R705	ERDS2TJ222	2.2K 1/4
R706	ERDS2TJ332	3.3K 1/4
R707	ERDS2TJ472	4.7K 1/4
R708	ERDS2TJ682	6.8K 1/4
R709	ERDS2TJ123	12K 1/4
R710	ERDS2TJ223	22K 1/4
R711	ERDS2TJ821	820 1/4
R712	ERDS2TJ102	1K 1/4
R713	ERDS2TJ122	1.2K 1/4
R714	ERDS2TJ152	1.5K 1/4
R715	ERDS2TJ182	1.8K 1/4
R716	ERDS2TJ222	2.2K 1/4
R717	ERDS2TJ332	3.3K 1/4
R718	ERDS2TJ472	4.7K 1/4
R719	ERDS2TJ682	6.8K 1/4
R722	ERDS2TJ102	1K 1/4
R723	ERDS2TJ102	1K 1/4
R724	ERDS2TJ331	330 1/4
R725	ERDS2TJ331	330 1/4
R726	ERDS2TJ681	680 1/4
R727	ERDS2TJ821	820 1/4
R728	ERDS2TJ102	1K 1/4
R729	ERDS2TJ102	1K 1/4
R730	ERDS2TJ102	1K 1/4
R731	ERDS2TJ102	1K 1/4
R732	ERDS2TJ221	220 1/4
R733	ERDS2TJ221	220 1/4
R734	ERDS2TJ473	47K 1/4
R735	ERDS2TJ103	10K 1/4
R736	ERDS2TJ103	10K 1/4
R737	ERDS2TJ103	10K 1/4
R738	ERDS2TJ103	10K 1/4
R739	ERDS2TJ103	10K 1/4
R740	ERDS2TJ103	10K 1/4
R741	ERDS2TJ123	12K 1/4
R742	ERDS2TJ223	22K 1/4
R743	ERDS2TJ683	68K 1/4
R744	ERDS2TJ393	39K 1/4
R801 (E, EG, EH, XA) (XB, PA, PE)	ERG1ANJ390	39 1
R801 (EK, XL)	ERG2ANJ390	39 2
R802 (E, EG, EH, XA) (XB, PA, PE)	ERG1ANJ390	39 1
R802 (EK, XL)	ERG2ANJ390	39 2
R803	ERDS2TJ104	100K 1/4
R804	ERDS2TJ104	100K 1/4
R805	ERDS2TJ152	1.5K 1/4
R806	ERDS2TJ152	1.5K 1/4
R807	ERDS2TJ104	100K 1/4
R808	ERDS2TJ104	100K 1/4
R809	ERDS2TJ821	820 1/4
R810	ERDS2TJ821	820 1/4
R811	ERDS2TJ104	100K 1/4
R812	ERDS2TJ104	100K 1/4
R813	ERDS2TJ821	820 1/4
R814	ERDS2TJ821	820 1/4
R815	ERDS2TJ182	1.8K 1/4
R816	ERDS2TJ182	1.8K 1/4
R817	ERX2ANJ270	27 2
R818	ERX2ANJ270	27 2
R819	ERDS2TJ123	12K 1/4
R820	ERDS2TJ123	12K 1/4
R821	ERDS2TJ243	24K 1/4
R822	ERDS2TJ243	24K 1/4
R823	ERDS2TJ225	2.2M 1/4
R824	ERDS2TJ225	2.2M 1/4
R827	ERDS2TJ103	10K 1/4
R828	ERDS2TJ103	10K 1/4
R831	ERDS2TJ104	100K 1/4
R832	ERDS2TJ104	100K 1/4
R833	ERDS2TJ223	22K 1/4
R834	ERDS2TJ223	22K 1/4
R835 (EK, XL)	ERQ16NKR15E	0.15 1
R901	ERDS2TJ683	68K 1/4
R902	ERDS2TJ101	100 1/4
R903	ERDS2TJ823	82K 1/4
R904	ERDS2TJ393	39K 1/4
R905	ERDS2TJ472	4.7K 1/4
R906	ERDS2TJ102	1K 1/4
R907	ERDS2TJ473	47K 1/4
R908	ERDS2TJ153	15K 1/4
R909	ERDS2TJ272	2.7K 1/4
R910	ERDS2TJ103	10K 1/4
R911	ERDS2TJ103	10K 1/4
R912	ERDS2TJ272	2.7K 1/4
R913	ERDS2TJ332	3.3K 1/4
R914	ERDS2TJ103	10K 1/4
R915	ERDS2TJ103	10K 1/4
R916	ERDS2TJ332	3.3K 1/4
R917	ERDS2TJ103	10K 1/4
R918	ERDS2TJ563	56K 1/4
R919	ERDS2TJ563	56K 1/4
R920	ERDS2TJ103	10K 1/4
R921	ERDS2TJ473	47K 1/4
R922	ERDS2TJ473	47K 1/4
R923	ERDS2TJ393	39K 1/4
R924	ERDS2TJ122	1.2K 1/4
R925	ERDS2TJ222	2.2K 1/4
R926	ERDS2TJ104	100K 1/4
R927	ERDS2TJ223	22K 1/4
R928	ERDS2TJ103	10K 1/4
R929	ERDS2TJ562	5.6K 1/4
R930	ERDS2TJ104	100K 1/4
R931	ERDS2TJ123	12K 1/4
R932	ERDS2TJ104	100K 1/4
R933	ERDS2TJ223	22K 1/4
R934	ERDS2TJ473	47K 1/4
R935	ERDS2TJ472	4.7K 1/4
R936	ERDS2TJ103	10K 1/4
R937	ERDS2TJ333	33K 1/4
R938	ERDS2TJ223	22K 1/4
R939	ERDS2TJ272	2.7K 1/4
R941	ERDS2TJ103	10K 1/4
R942	ERDS2TJ123	12K 1/4
R943	ERDS2TJ562	5.6K 1/4
R945	ERDS2TJ681	680 1/4
R946	ERDS2TJ681	680 1/4
R948	ERDS2TJ681	680 1/4

Ref. No.	Part No.	Value.
R949	ERDS2TJ681	680 1/4
R951	ERDS2TJ104	100K 1/4
R953	ERDS2TJ104	100K 1/4
R954	ERDS2TJ223	22K 1/4
R955	ERDS2TJ223	22K 1/4
R956	ERDS2TJ105	1M 1/4
R957	ERDS2TJ182	1.8K 1/4
R958	ERDS2TJ103	10K 1/4
R959	ERDS2TJ471	470 1/4
R960	ERDS2TJ103	10K 1/4
R961	ERDS2TJ103	10K 1/4
R962	ERDS2TJ123	12K 1/4
R963	ERDS2TJ562	5.6K 1/4
R964	ERDS2TJ272	2.7K 1/4
R966	ERDS2TJ273	27K 1/4
R967	ERDS2TJ223	22K 1/4
R968	ERDS2TJ223	22K 1/4
R969	ERDS2TJ473	47K 1/4
R970	ERDS2TJ223	22K 1/4
R971	ERDS2TJ103	10K 1/4
R972	ERDS2TJ103	10K 1/4
R973	ERDS2TJ223	22K 1/4
R974	ERDS2TJ562	5.6K 1/4
R976	ERDS2TJ102	1K 1/4
R977	ERDS2TJ102	1K 1/4
R978	ERDS2TJ102	1K 1/4
R979	ERDS2TJ103	10K 1/4
R980	ERDS2TJ103	10K 1/4
R981	ERDS2TJ103	10K 1/4
R982	ERDS2TJ223	22K 1/4
R983	ERDS2TJ102	1K 1/4
R984	ERDS2TJ223	22K 1/4
R985	ERDS2TJ223	22K 1/4
R991	ERDS2TJ222	2.2K 1/4
R1001	ERDS2TJ102	1K 1/4
R1002	ERDS2TJ102	1K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1	ECKD1H122KB	1200P 50
C2	ECKD1H122KB	1200P 50
C3	ECKD1H122KB	1200P 50
C4	ECKD1H122KB	1200P 50
C5	ECCC1H221K	220P 50
C6	ECCC1H221K	220P 50
C9	ECKD1H561KB	560P 50
C10	ECKD1H561KB	560P 50
C11	ECEA0JPU101	100 6.3
C12	ECEA0JPU101	100 6.3
C13	ECQB1H123JZ	0.012 50
C14	ECQB1H123JZ	0.012 50
C15	ECEA1VPS4R7	4.7 35
C16	ECEA1VPS4R7	4.7 35
C17	RCBS1H181KBY	180P 50
C18	RCBS1H181KBY	180P 50
C19	ECEA1HKR47	0.47 50
C20	ECEA1HKR47	0.47 50
C21	ECEA1HK010	1 50
C22	ECEA1HK010	1 50
C23	ECEA1HK010	1 50
C24	ECEA1HK010	1 50
C25	ECQB1H103JZ	0.01 50
C26	ECQB1H103JZ	0.01 50
C27	ECQB1H103JZ	0.01 50
C28	ECQB1H103JZ	0.01 50
C29	RCBS1H181KBY	180P 50
C30	RCBS1H181KBY	180P 50
C31	ECQB1H273JZ	0.027 50
C32	ECQB1H273JZ	0.027 50
C33	ECEA1HKR47	0.47 50
C34	ECEA1HKR47	0.47 50
C35	ECQB1H272JZ	0.0027 50
C36	ECQB1H272JZ	0.0027 50
C37	ECQB1H223JZ	0.022 50
C38	ECQB1H223JZ	0.022 50
C39	ECQB1H123JZ	0.012 50
C40	ECQB1H123JZ	0.012 50
C41	ECQB1H333JZ	0.033 50
C42	ECQB1H333JZ	0.033 50
C43	ECQB1H392JZ	0.0039 50
C44	ECQB1H392JZ	0.0039 50
C45	ECKD2H121KB	120P 500
C46	ECKD2H121KB	120P 500
C47	ECKD2H121KB	120P 500
C48	ECKD2H121KB	120P 500
C49	ECBT1H561KB5	560P 50
C50	ECBT1H561KB5	560P 50
C51	ECBT1H561KB5	560P 50
C52	ECBT1H561KB5	560P 50
C53	ECCC1H221K	220P 50
C54	ECCC1H221K	220P 50
C55	ECCC1H221K	220P 50
C56	ECCC1H221K	220P 50
C57	ECEA1CPS100	10 16
C58	ECEA1CPS100	10 16
C59	ECEA1CPS100	10 16
C60	ECEA1CPS100	10 16
C61	ECEA1CPS100	10 16
C62	ECEA1CPS100	10 16
C65	ECEA1CPS100	10 16
C66	ECEA1CPS100	10 16
C201	ECEA1HK010	1 50
C202	ECEA1HN010S	1 50
C203	ECKD1H122KB	1200P 50
C204	ECEA1CKS100	10 16
C205	ECEA1EU220	22 25
C301	ECQP1183JZ	0.018 100
C302	ECQP1183JZ	0.018 100
C303	ECKD1H392KB	0.0039 50
C304	ECKD1H392KB	0.0039 50
C305	ECFR1E222KAY	2200P 25
C306	ECFR1E222KAY	2200P 25
C307	ECFR1E222KAY	2200P 25
C308	ECFR1E222KAY	2200P 25
C309	ECEA1EU221	220 25
C310	ECEA1EU221	220 25
C311	ECKD1H103PF	0.01 50
C312	ECKD1H103PF	0.01 50
C313	ECFR1E682KAY	6800P 25
C314	ECFR1E682KAY	6800P 25
C315	ECBT1E103ZF	0.01 25
C401	ECCD1H820K	82P 50
C402	ECCD1H820K	82P 50
C403	ECQB1H472JZ	4700P 50
C404	ECQB1H472JZ	4700P 50
C405	ECEA1CKS100	10 16
C406	ECEA1CKS100	10 16
C407	ECQM1H473JZ	0.047 50
C408	ECQM1H473JZ	0.047 50
C409	ECQV1H224JZ	0.22 50
C410	ECQV1H224JZ	0.22 50
C411	ECAG25ER68L	0.68 50
C412	ECAG25ER68L	0.68 50
C413	ECQB1H103JZ	0.01 50
C414	ECQB1H103JZ	0.01 50
C415	ECQB1H472JZ	4700P 50
C416	ECQB1H472JZ	4700P 50
C417	ECEA1CKS100	10 16
C418	ECEA1CKS100	10 16
C419	ECQM1H473JZ	0.047 50
C420	ECQM1H473JZ	0.047 50
C421	ECQV1H224JZ	0.22 50
C422	ECQV1H224JZ	0.22 50
C423	ECAG25ER68L	0.68 50
C424	ECAG25ER68L	0.68 50
C425	ECKD1H152KB	1500P 50
C426	ECKD1H152KB	1500P 50
C427	ECKD1H122KB	1200P 50
C428	ECKD1H122KB	1200P 50
C601 ⚠	ECKDKC103PF2	0.01 125
C602	ECEA1CU221	220 16
C603	ECEA1VU471	470 35
C604	ECKD1H103PF	0.01 50
C605	ECEA1ES332	3300 25
C606	ECEA1EU102	1000 25
C607	ECEA1AU221	220 10
C608	ECEA1AU221	220 10
C609	ECKD1H103PF	0.01 50
C610	ECKD1H103PF	0.01 50
C611	ECKD1H103PF	0.01 50
C612	ECEA1CKS100	10 16
C614	ECEA1VU471	470 35
C615	ECEA10V1000	1000 10
C616	ECEA0JU222	2200 6.3
C617	ECKD1H103PF	0.01 50
C618	ECKD1H103PF	0.01 50
C619	ECEA1CU221	220 16
C620	ECEA1CU470	47 16
C621	ECEA1EU470	47 25
C622	ECEA1EU101	100 25
C623	ECEA1EU470	47 25
C624	ECKD1H103PF	0.01 50
C625	ECKD1H103PF	0.01 50
C626	ECEA0JU222	2200 6.3
C627	ECKD1H103PF	0.01 50
C628	ECKD2H682PEL	6800P 500
C701	ECQV1H104JZ	0.1 50
C702	ECQV1H104JZ	0.1 50
C703	ECEA1CU330	33 16
C704	ECEA1CU330	33 16
C803	ECEA1HK010	1 50
C804	ECEA1HK010	1 50
C805	ECEA1EK4R7	4.7 25
C806	ECEA1EK4R7	4.7 25
C807	ECEA1CN100S	10 16
C808	ECEA1CN100S	10 16
C901	ECQB1H822JZ	0.0082 50
C902	ECCD1H470K	47P 50
C903	ECEA1HK010	1 50
C904	ECEA1CKS100	10 16
C905	ECKD1H103PF	0.01 50
C906	ECEA1AU221	220 10
C907	ECEA1EK4R7	4.7 25
C910	ECEA1EK4R7	4.7 25
C911	ECEA1HK010	1 50
C912	ECKD1H103PF	0.01 50
C913	ECBT1E103ZF	0.01 25
C914	ECBT1E103ZF	0.01 25
C915	ECBT1E103ZF	0.01 25
C917	ECKD1H103PF	0.01 50
C1001	ECEA1CU330	33 16
C1002	ECEA1CU330	33 16

■ REPLACEMENT PARTS LIST

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN7016NK	I.C. REC./PLAYBACK AMP.
IC2	M5218L	I.C. REC. AMP.
IC6	MN6634	I.C. REC. INPUT SELECTOR
IC7	MN6634	I.C. A/B INPUT SELECTOR
IC201	M51131LH	I.C. REC. LEVEL CONTROL
IC202	M5218L	I.C. REC. LEVEL AMP.
IC203	M5218L	I.C. REC. INPUT AMP.
IC401	TEA0665	I.C. DOLBY B-C NR
IC402	TEA0665	I.C. DOLBY B-C NR
IC700	MN4094B	I.C. SHIFT REGISTER
IC701	BA6146	I.C. FL METER DRIVE
IC702	BA6146	I.C. FL METER DRIVE
IC801	LB1648	I.C. DECK A/B REEL MOTOR
IC901	M5218L	I.C. MUSIC SELECTOR AMP.
IC902	M50746-411SP	I.C. MICRO COMPUTER
IC903	MN4094B	I.C. SHIFT REGISTER
IC904	MN4584B	I.C. SCHMIT TRIGGER
TRANSISTORS		
Q1	2SJ40CTA	TRANSISTOR
Q2	2SJ40CTA	TRANSISTOR
Q3	2SJ40CTA	TRANSISTOR
Q4	2SJ40CTA	TRANSISTOR
Q5	2SC3311A-Q	TRANSISTOR
Q6	2SC3311A-Q	TRANSISTOR
Q7	2SK381	TRANSISTOR
Q8	2SK381	TRANSISTOR
Q9	2SC3311A-Q	TRANSISTOR
Q10	2SC3311A-Q	TRANSISTOR
Q11	2SC3311A-Q	TRANSISTOR
Q12	2SC3311A-Q	TRANSISTOR
Q13	2SA1309Q	TRANSISTOR
Q14	2SA1309Q	TRANSISTOR
Q15	2SD1330R	TRANSISTOR
Q16	2SD1330R	TRANSISTOR
Q17	2SD1330R	TRANSISTOR
Q18	2SD1330R	TRANSISTOR
Q19	2SA1309Q	TRANSISTOR
Q20	2SA1309Q	TRANSISTOR
Q21	2SA1309Q	TRANSISTOR
Q22	2SA1309Q	TRANSISTOR
Q23	2SC3311A-Q	TRANSISTOR
Q24	2SC3311A-Q	TRANSISTOR
Q25	2SC3311A-Q	TRANSISTOR
Q26	2SC3311A-Q	TRANSISTOR
Q27	2SC3311A-Q	TRANSISTOR
Q28	2SC3311A-Q	TRANSISTOR
Q29	2SD1330R	TRANSISTOR
Q30	2SD1330R	TRANSISTOR
Q41	2SK381	TRANSISTOR
Q42	2SK381	TRANSISTOR
Q201	UN4113	TRANSISTOR
Q203	2SJ40CTA	TRANSISTOR
Q204	2SJ40CTA	TRANSISTOR
Q301	2SC3311A-Q	TRANSISTOR
Q302	2SC3311A-Q	TRANSISTOR
Q303	2SC3311A-Q	TRANSISTOR
Q304	2SC3311A-Q	TRANSISTOR
Q305	2SD592ANCQ	TRANSISTOR
Q306	2SD592ANCQ	TRANSISTOR
Q307	2SB621A-R	TRANSISTOR
Q308	2SB621A-R	TRANSISTOR
Q309	UN4116	TRANSISTOR
Q310	UN4116	TRANSISTOR
Q601	2SD1265-P	TRANSISTOR
Q602	2SB941-P	TRANSISTOR
Q603	2SD592ANCQ	TRANSISTOR
Q604	2SD592ANCQ	TRANSISTOR
Q605	2SB621A-R	TRANSISTOR
Q606	2SD592ANCQ	TRANSISTOR
Q700	UN4111	TRANSISTOR
Q701	UN4111	TRANSISTOR
Q702	UN4111	TRANSISTOR
Q703	UN4111	TRANSISTOR
Q704	UN4111	TRANSISTOR
Q705	UN4111	TRANSISTOR
Q706	UN4111	TRANSISTOR
Q707	UN4111	TRANSISTOR
Q709	UN4111	TRANSISTOR
Q710	UN4111	TRANSISTOR
Q711	UN4111	TRANSISTOR
Q712	UN4111	TRANSISTOR
Q713	2SD1330R	TRANSISTOR
Q714	2SD1330R	TRANSISTOR
Q801	2SB977-PQR	TRANSISTOR
Q802	2SB621A-R	TRANSISTOR
Q803	UN4211	TRANSISTOR
Q804	2SB977-PQR	TRANSISTOR
Q805	2SB621A-R	TRANSISTOR
Q806	UN4211	TRANSISTOR
Q807	2SB621A-R	TRANSISTOR
Q808	UN4211	TRANSISTOR
Q809	2SB621A-R	TRANSISTOR
Q810	UN4211	TRANSISTOR
Q811	2SK381	TRANSISTOR
Q812	2SK381	TRANSISTOR
Q817	UN4216	TRANSISTOR
Q818	UN4216	TRANSISTOR
Q901	2SC3311A-Q	TRANSISTOR
Q902	2SA1309Q	TRANSISTOR
Q903	2SC3311A-Q	TRANSISTOR
Q904	UN4113	TRANSISTOR
Q905	UN4111	TRANSISTOR
Q906	UN4111	TRANSISTOR
Q907	UN4215	TRANSISTOR
Q908	UN4111	TRANSISTOR
Q909	UN4111	TRANSISTOR
Q910	2SC3311A-Q	TRANSISTOR
Q911	2SC3311A-Q	TRANSISTOR
Q912	UN4113	TRANSISTOR
Q913	UN4113	TRANSISTOR
Q914	2SA1309Q	TRANSISTOR
Q915	2SC3311A-Q	TRANSISTOR
Q916	UN4111	TRANSISTOR
Q917	UN4111	TRANSISTOR
Q918	UN4111	TRANSISTOR
Q919	UN4111	TRANSISTOR
Q920	UN4211	TRANSISTOR
Q921	UN4211	TRANSISTOR
Q922	2SC3311A-Q	TRANSISTOR
Q927	UN4213	TRANSISTOR
Q928	UN4213	TRANSISTOR
Q930	UN4213	TRANSISTOR
Q932	UN4213	TRANSISTOR
Q933	UN4213	TRANSISTOR
Q934	2SA1309Q	TRANSISTOR
Q935	UN4213	TRANSISTOR
Q936	UN4213	TRANSISTOR
Q937	UN4213	TRANSISTOR
Q940	UN4111	TRANSISTOR
Q941	UN4111	TRANSISTOR
Q942	UN4111	TRANSISTOR
Q943	UN4111	TRANSISTOR
Q945	UN4115	TRANSISTOR
DIODES		
D1	MA165	DIODE
D2	MA165	DIODE
D3	MA165	DIODE
D4	MA165	DIODE
D5	MA165	DIODE
D6	MA165	DIODE
D201	MA165	DIODE

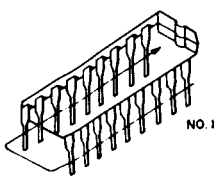
Ref. No.	Part No.	Description
D202	MA165	DIODE
D301	MA165	DIODE
D302	MA165	DIODE
D303	MA165	DIODE
D304	MA165	DIODE
D601 ⚠	SVD1SR35200A	RECTIFIER
D602 ⚠	SVD1SR35200A	RECTIFIER
D603 ⚠	SVD1SR35200A	RECTIFIER
D604 ⚠	SVD1SR35200A	RECTIFIER
D605 ⚠	SVD1SR35200A	RECTIFIER
D606 ⚠	SVD1SR35200A	RECTIFIER
D607	MA165	DIODE
D608	MA165	DIODE
D609	MA4091-M	DIODE
D610	MA4091-M	DIODE
D611	MA4062M	DIODE
D612	MA4120	DIODE
D613	MA4160M	DIODE
D614	MA4160M	DIODE
D615 ⚠	SVD1SR35200A	RECTIFIER
D616 ⚠	SVD1SR35200A	RECTIFIER
D700	LN38GCPP	L.E.D
D701	LN38GCPP	L.E.D
D702	LN38GCPP	L.E.D
D703	LN38GCPP	L.E.D
D704	LN88RCPP	L.E.D
D705	MA4033	DIODE
D706	MA165	DIODE
D707	MA165	DIODE
D708	SLV31MC3	L.E.D
D709	SLV31MC3	L.E.D
D710	SLV31VC3	L.E.D
D711	SLV31VC3	L.E.D
D712	SLV31VC3	L.E.D
D713	SLV31VC3	L.E.D
D801	MA165	DIODE
D802	MA165	DIODE
D803	MA4033M	DIODE
D804	MA4033M	DIODE
D805	MA4075M	DIODE
D806	MA4075M	DIODE
D807	MA4056-M	DIODE
D808	MA4056-M	DIODE
D809	MA165	DIODE
D810	MA165	DIODE
D811	MA165	DIODE
D812	MA165	DIODE
D901	MA165	DIODE
D902	MA165	DIODE
D903	MA165	DIODE
D904	MA165	DIODE
D905	MA165	DIODE
D906	MA165	DIODE
D907	MA165	DIODE
D908	MA165	DIODE
D909	MA165	DIODE
D910	MA165	DIODE
D911	MA165	DIODE
D912	MA165	DIODE
D913	MA165	DIODE
D914	MA165	DIODE
D915	MA165	DIODE
D916	MA165	DIODE
D917	MA165	DIODE
D918	MA165	DIODE
D919	MA165	DIODE
D920	MA165	DIODE
D921	MA165	DIODE
D922	MA165	DIODE
D923	MA165	DIODE
D924	MA165	DIODE
D925	MA165	DIODE
D926	MA165	DIODE
D927	MA165	DIODE
D928	MA165	DIODE
D930	MA165	DIODE

Ref. No.	Part No.	Description
D934	MA165	DIODE
D935	MA165	DIODE
D936	MA165	DIODE
D937	MA165	DIODE
D938	MA165	DIODE
D939	MA165	DIODE
D940	MA165	DIODE
D941	MA165	DIODE
D942	MA165	DIODE
D943	MA165	DIODE
D945	MA165	DIODE
D946 ⚠	SVD1SR35200A	RECTIFIER
D947	MA165	DIODE
D948	MA165	DIODE
D949	MA165	DIODE
D951	MA700A	DIODE
D952	MA165	DIODE
D953	MA165	DIODE
D954	MA165	DIODE
I.C.PROTECTORS		
ICP1 (EK, XL)	SRUN25T	IC PROTECTOR
ICP2 (EK, XL)	SRUN10	IC PROTECTOR
VARIABLE RESISTORS		
VR1	EVND4AA00B24	V.R, P.B. GAIN (L) , B
VR2	EVND4AA00B24	V.R, P.B. GAIN (R) , B
VR3	EVND4AA00B24	V.R, P.B. GAIN (L) , A
VR4	EVND4AA00B24	V.R, P.B. GAIN (R) , A
VR5	EVND4AA00B14	V.R, OVERALL GAIN (L) , B
VR6	EVND4AA00B14	V.R, OVERALL GAIN (R) , B
VR7	EVND4AA00B14	V.R, OVERALL GAIN (L) , A
VR8	EVND4AA00B14	V.R, OVERALL GAIN (R) , A
VR9	EVND4AA00B15	V.R, O.F. RESPONSE (L), B
VR10	EVND4AA00B15	V.R, O.F. RESPONSE (R), B
VR11	EVND4AA00B15	V.R, O.F. RESPONSE (L), A
VR12	EVND4AA00B15	V.R, O.F. RESPONSE (R), A
VR13	EWH97V008B15	V.R, REC. LEVEL
VR301	EVND4AA00B53	V.R, BIAS CURRENT , B
VR302	EVND4AA00B53	V.R, BIAS CURRENT , A
VR701	EVNM0AA00B24	V.R, FL METER ADJ. (L)
VR702	EVNM0AA00B24	V.R, FL METER ADJ. (R)
VR801	EVND4AA00B14	V.R, TAPE SPEED (X1) , A
VR802	EVND4AA00B14	V.R, TAPE SPEED (X1) , B
VR803	EVN4LCA00B14	V.R, TAPE SPEED (X2) , A
VR804	EVN4LCA00B14	V.R, TAPE SPEED (X2) , B
COILS AND TRANSFORMERS		
L1	SLQX303-1K	CHOKE COIL
L2	SLQX303-1K	CHOKE COIL
L3	SLQX303-1K	CHOKE COIL
L4	SLQX303-1K	CHOKE COIL
L5	SLQX272-1YT	CHOKE COIL
L6	SLQX272-1YT	CHOKE COIL
L7	SLQX272-1YT	CHOKE COIL
L8	SLQX272-1YT	CHOKE COIL
L301	SL09C19-K	OSCILLATOR COIL
L302	SL09C19-K	OSCILLATOR COIL
L401	QLB40048	M.P.X. COIL
L402	QLB40048	M.P.X. COIL
L403	ELM7Q306A	CHOKE COIL
L404	ELM7Q306A	CHOKE COIL
T601 ⚠ (E, EG, EH)	SLT5V19	POWER TRANSFORMER
T601 ⚠ (EK, XL)	SLT5V20	POWER TRANSFORMER
T601 ⚠ (XA, XB, PA) (PE)	SLT5V21	POWER TRANSFORMER
COMPONENT COMBINATIONS		
Z701	EXBF6E223J	COMPONENT COMBINATION
Z702	EXBF8E223J	COMPONENT COMBINATION
Z901	EXBF7E562J	COMPONENT COMBINATION
OSCILLATORS		
X901	EF0FC4004A4	CERAMIC FILTER

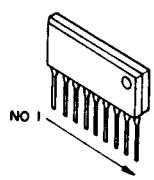
Ref. No.	Part No.	Description
DISPLAYS		
FL1	SADFV235G	FL DISPLAY
FUSES		
F601 ⚠ (E, EG, EH)	XBAS2A2001	FUSE
SWITCHES		
S601 ⚠	ESB8249V	SW, POWER
S602 ⚠ (XA, XB, PA)	SSR187-1	SW, VOLTAGE SELECTOR
(PE)		
S700	SSS147-1	SW, TIMER
S701	SSS147-1	SW, REVERSE MODE SELECT
S702	EVQQB005R	SW, STOP (DECK A)
S703	EVQQB005R	SW, FF/REW (DECK A)
S704	EVQQB005R	SW, REW/FF (DECK A)
S705	EVQQB005R	SW, PLAY (FWD) (DECK A)
S706	EVQQB005R	SW, PLAY (REV) (DECK A)
S707	EVQQB005R	SW, REC (DECK A)
S708	EVQQB005R	SW, PAUSE (DECK A)
S709	EVQQB005R	SW, AUTO FADE
S710	EVQQB005R	SW, SYNCHRO START
S711	EVQQB005R	SW, SPEED (X2)
S712	EVQQB005R	SW, SPEED (X1)
S713	EVQQB005R	SW, V I A EXT

Ref. No.	Part No.	Description
S714	EVQQB005R	SW, AUTO REC MUTE (B)
S715	EVQQB005R	SW, AUTO REC MUTE (A)
S716	EVQQB005R	SW, STOP (DECK B)
S717	EVQQB005R	SW, FF/REW (DECK B)
S718	EVQQB005R	SW, REW/FF (DECK B)
S719	EVQQB005R	SW, PLAY (FWD) (DECK B)
S720	EVQQB005R	SW, PLAY (REV) (DECK B)
S721	EVQQB005R	SW, REC (DECK B)
S722	EVQQB005R	SW, PAUSE (DECK B)
S723	EVQQB005R	SW, DOLBY C NR
S724	EVQQB005R	SW, DOLBY B NR
S725	EVQQB005R	SW, DOLBY NR OFF
S727	EVQQB005R	SW, RESET
S728	EVQQB005R	SW, DECK A/B SELECTOR
S1001	SMQA1252	SW, ATS(METAL)(DECK A)
S1002	SMQA1252	SW, ATS(120/70)(DECK A)
S1003	SMQA1252	SW, REC, INHIBIT(FWD)(A)
S1004	SMQA1252	SW, REC, INHIBIT(REV)(A)
S1005	SMQA1252	SW, PACK (DECK A)
S1006	SMQA1253	LEAF SWITCH, DIRECTION (A)
S1007	SMQA1252	SW, ATS(METAL)(DECK B)
S1008	SMQA1252	SW, ATS(120/70)(DECK B)
S1009	SMQA1252	SW, REC, INHIBIT(FWD)(B)
S1010	SMQA1252	SW, REC, INHIBIT(REV)(B)
S1011	SMQA1252	SW, PACK (DECK B)
S1012	SMQA1253	LEAF SWITCH, DIRECTION (B)

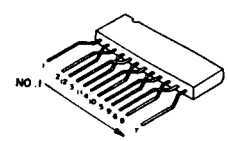
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



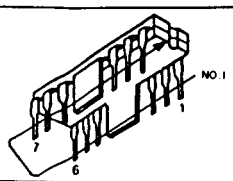
MN4584B	14 Pin
BA6146	16 Pin
AN7016NK	30 Pin
M50746-411SP	64 Pin
TEA0665	28 Pin
MN4094B	16 Pin



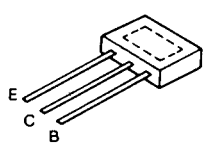
M5218L	8 Pin
MN6634	9 Pin



MN51131LH	14 Pin



LB1648	12 pin



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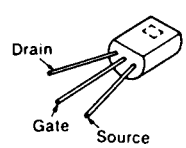

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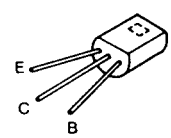

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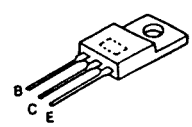

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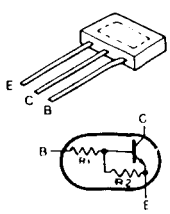
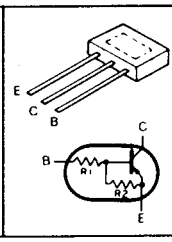
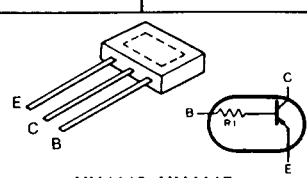
2SB941-P



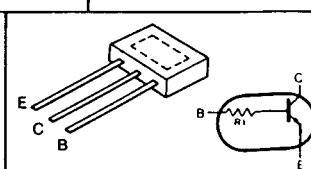
UN4213,
UN4211
UN4213
R1: 47K, R2: 47K
UN4211
R1: 10K, R2: 10K



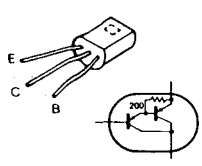
UN4111
UN4113
UN4111
R1: 10K, R2: 10K
UN4113
R1: 47K, R2: 47K



UN4116, UN4115
UN4116 R1: 4.7K,
UN4115 R1: 10K



UN4215, UN4216
UN4215 R1: 10K,
UN4216 R1: 4.7K



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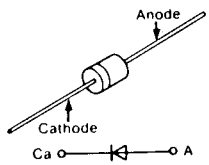
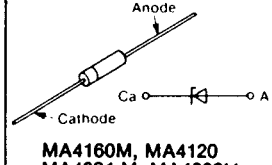
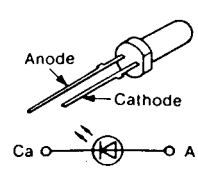


SVD1SR35200A,
MA165, MA700A



MA4160M, MA4120
MA4091-M, MA4062M
MA4033M, MA4075M,
MA4056-M



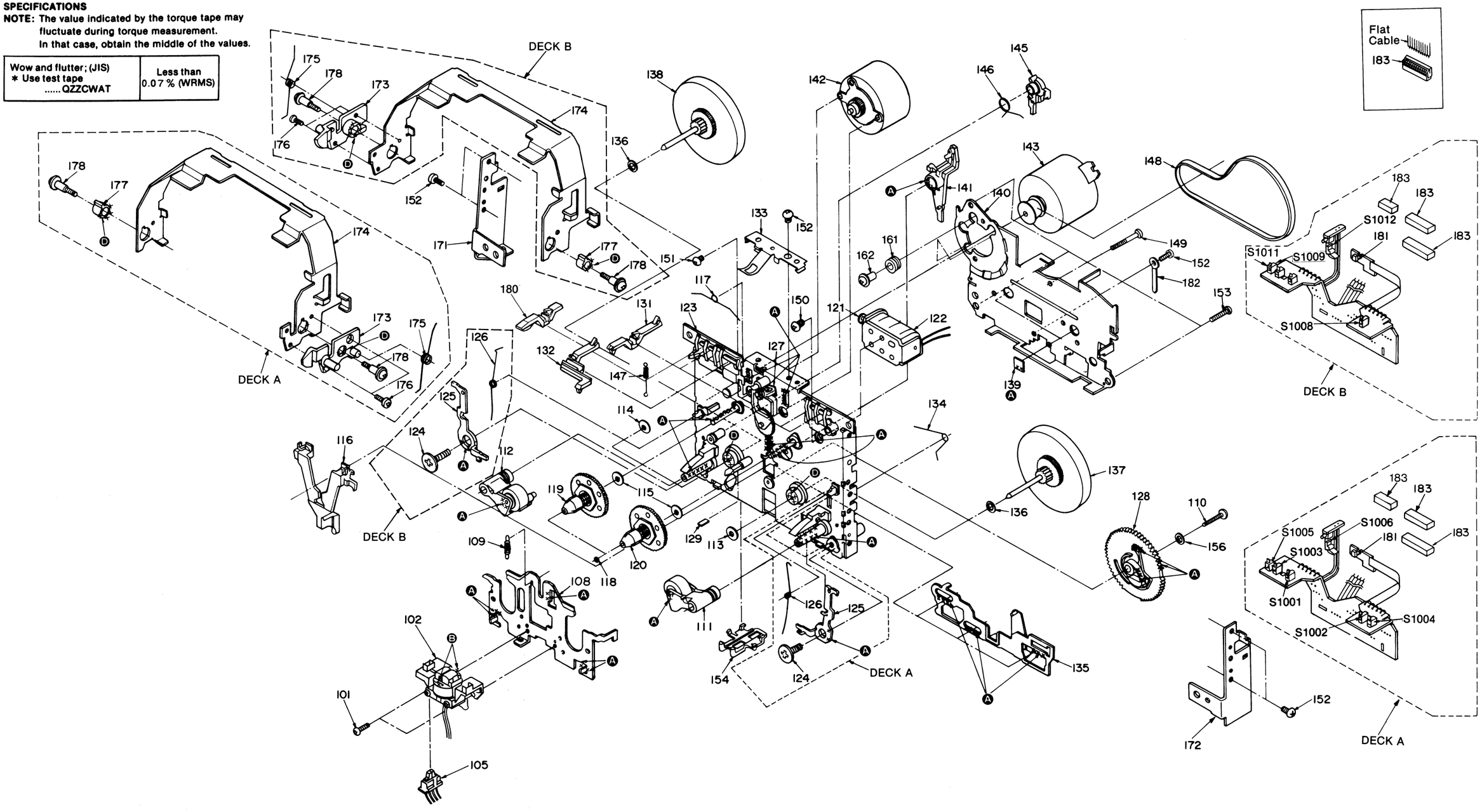
SLV31VC3	RED
SLV31MC3	GREEN
LN38GCPP	GREEN
LN88RCPP	ORANGE

■ MECHANICAL PARTS LOCATION

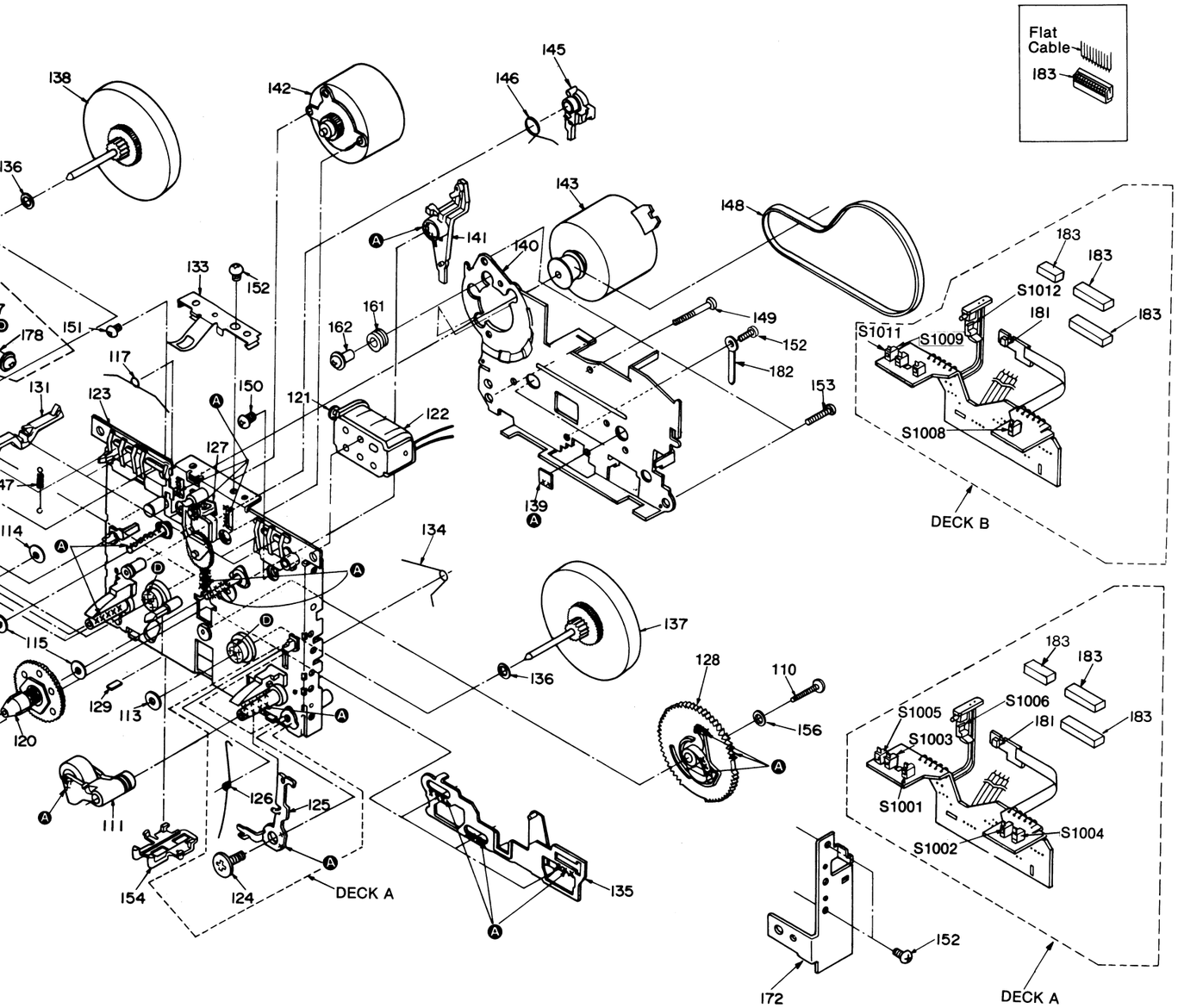
SPECIFICATIONS

NOTE: The value indicated by the torque tape may fluctuate during torque measurement. In that case, obtain the middle of the values.

Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.07 % (WRMS)



| | | |


Flat Cable
183
DECK B
DECK A
S1012
S1011
S1009
S1008
S1005
S1006
S1003
S1001
S1004
S1002
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135
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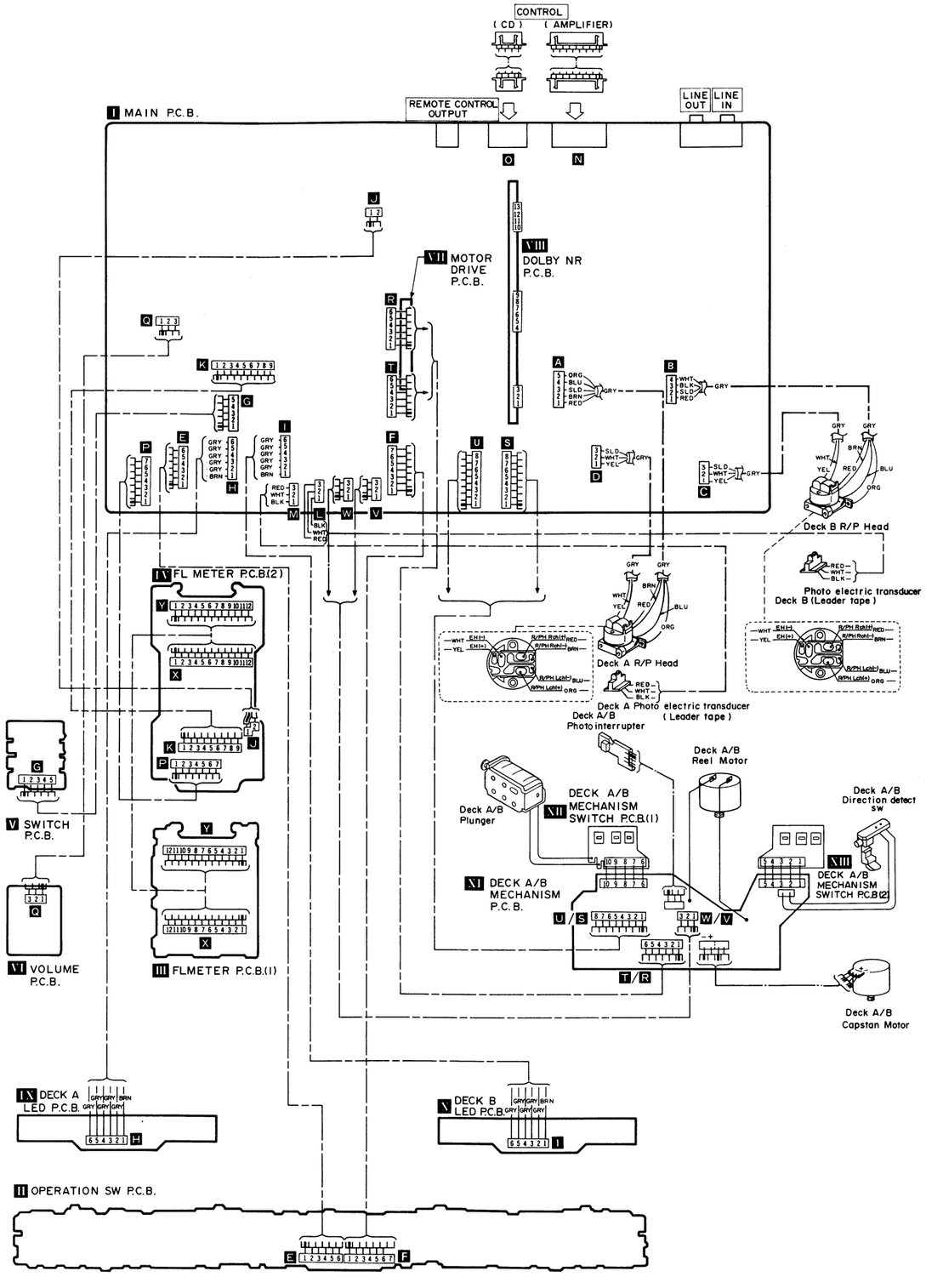
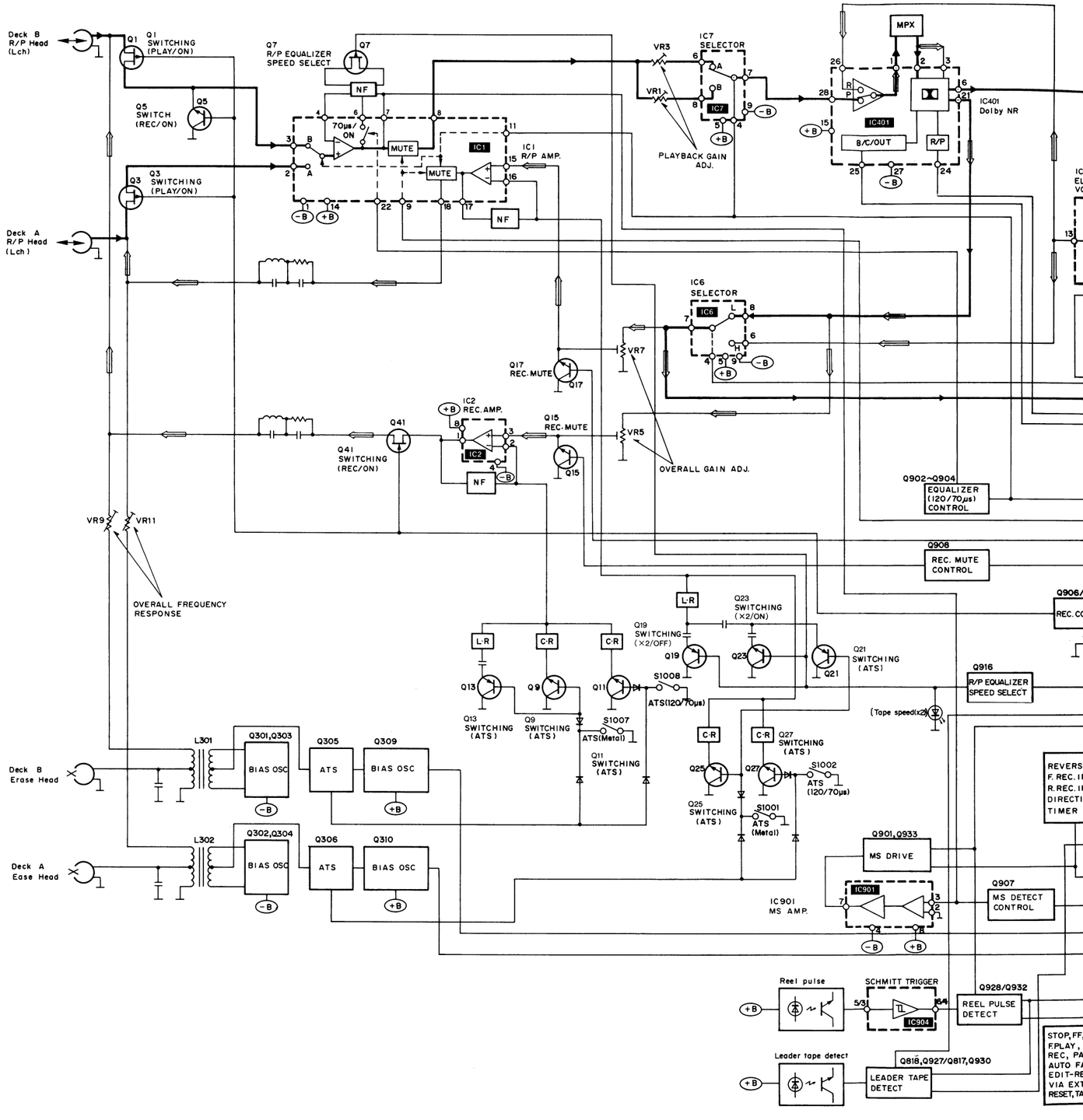
181

| 178 | | |

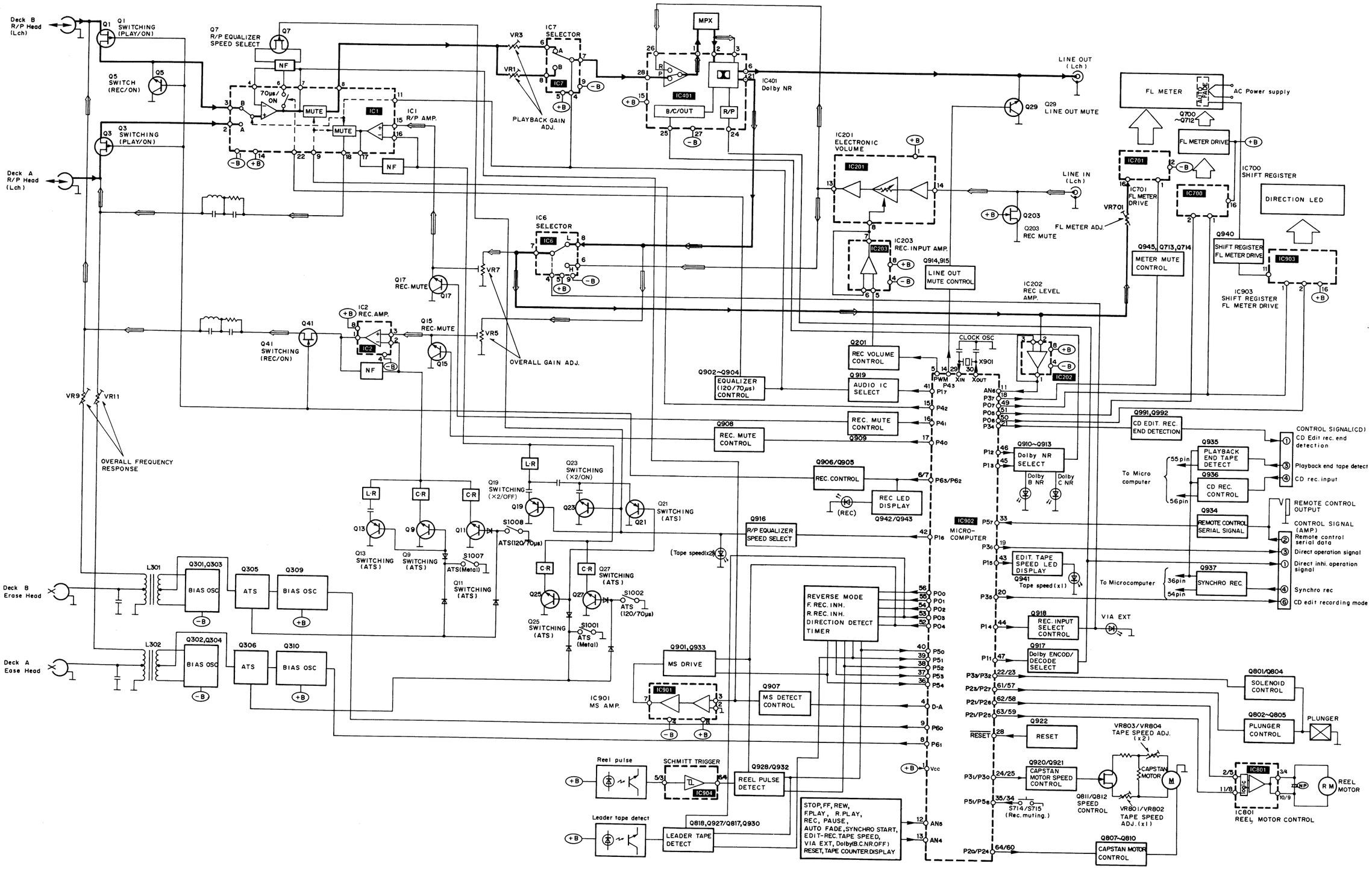
■ WIRING CONNECTION DIAGRAM



■ BLOCK DIAGRAM



■ BLOCK DIAGRAM



ORDER NO. AD8902029S9

Service Manual

Cassette Deck

RS-X990

Supplement

Dolby B • C NR-Equipped
Stereo Double Cassette Deck

DOLBY B•C NR*

Color

(K)...Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EK)	United Kingdom.	(K)
(EG)	F.R. Germany.	(K)
(EH)	Holland.	(K)
(XA)	Asia, Latin America, Middle Near East, Africa and Oceania.	(K)
(XL)	Australia.	(K)
(XB)	Saudi Arabia.	(K)
(PA)	Far East PX.	(K)
(PE)	European Military.	(K)

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade of Dolby Laboratories Licensing Correction.

Please file and use this supplement manual together with the service manual for Model No. RS-X990, Order No. HAD8804127C9.

Note

- This supplement has been issued to correct an error in a part number on page 23.

CHANGES

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	OLD	→ NEW		
MECHANISM PARTS				
102	SMQA1278	**SMQA1269**	REC/PLAY HEAD	

Technics

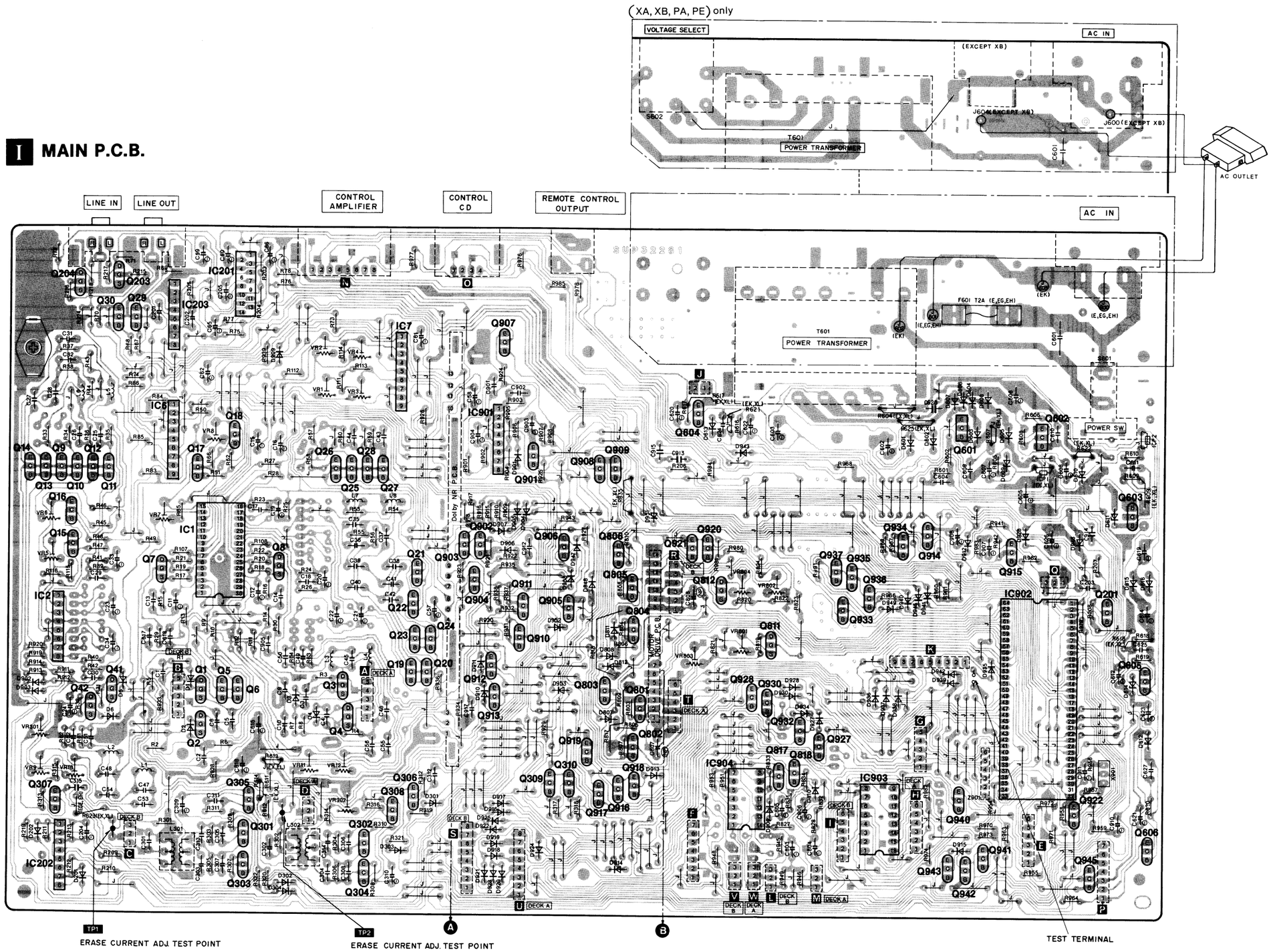
Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Panasonic Tokyo Sales Department
Matsushita Electric Industrial Co., Ltd.
World Trade Center Bldg., 4-1 Hamamatsu-cho, 2-chome, Minato-ku, Tokyo 10, Japan

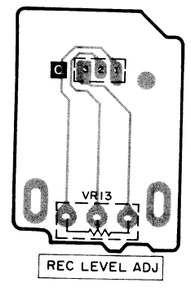
Printed in Japan
K8990207150TN

■ PRINTED CIRCUIT BOARDS

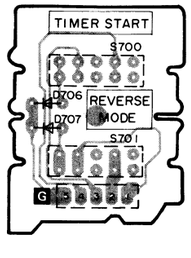
I MAIN P.C.B.



VI VR P.C.B.

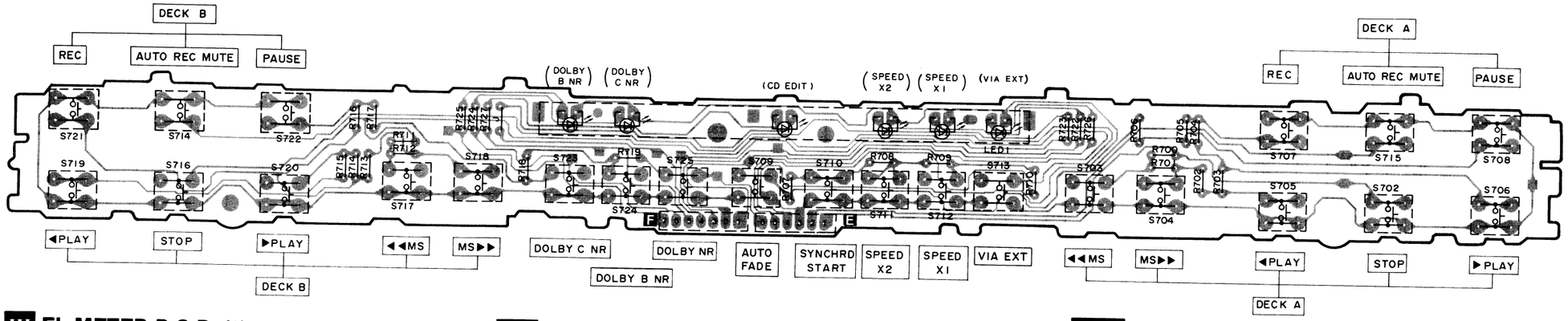


V SW P.C.B.

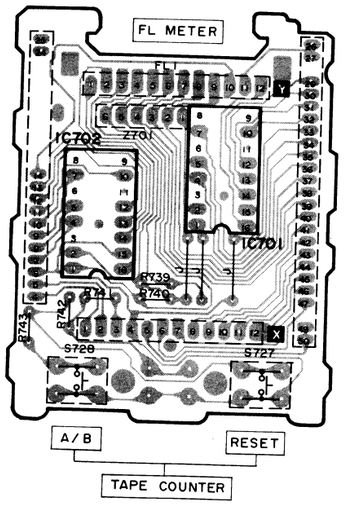


9 10 11 12 13 14 15 16 17 18 19

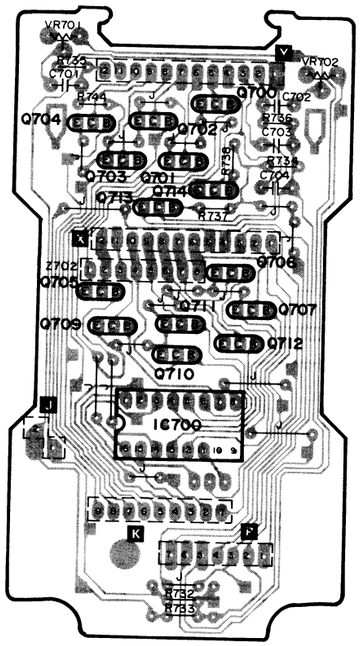
II OPERATION SW P.C.B.



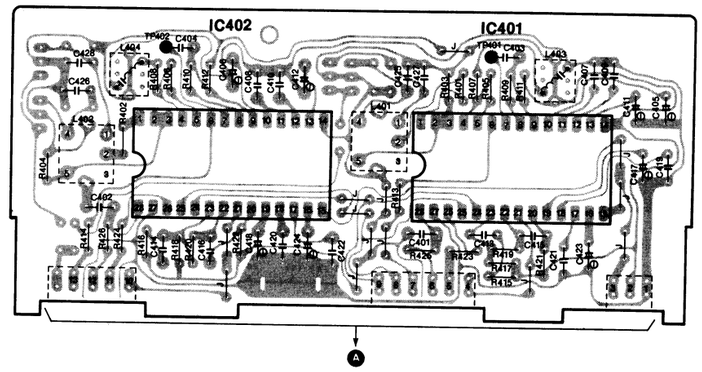
III FL METER P.C.B. (1)



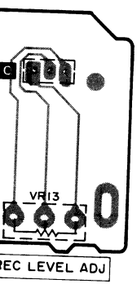
IV FL METER P.C.B. (2)



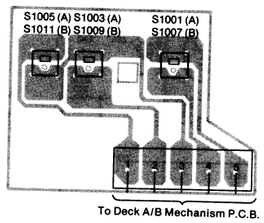
VIII DOLBY NR P.C.B.



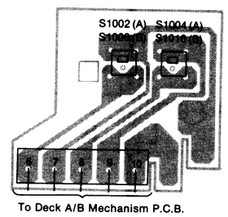
VI VR P.C.B.



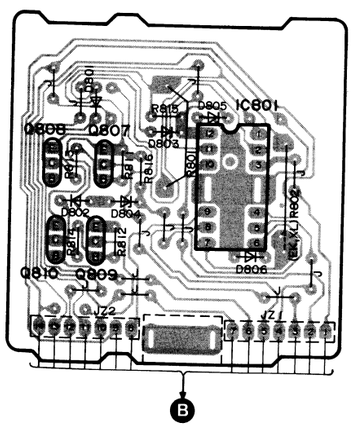
XII DECK A/B MECHANISM SW P.C.B. (1)



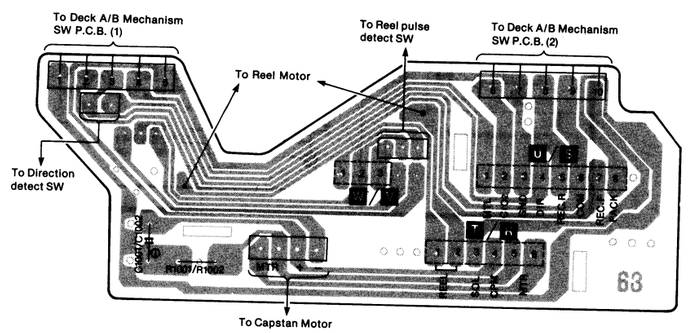
XIII DECK A/B MECHANISM SW P.C.B. (2)



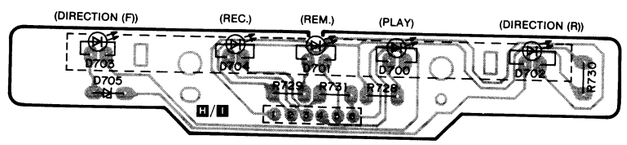
VII MOTOR DRIVE P.C.B.



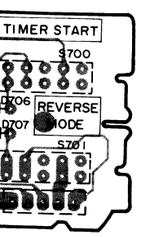
XI DECK A/B MECHANISM P.C.B.


To Deck A/B Mechanism SW P.C.B. (1)
To Reel pulse detect SW
To Deck A/B Mechanism SW P.C.B. (2)
To Reel Motor
To Direction detect SW
To Capstan Motor

IX X DECK A/B LED P.C.B.

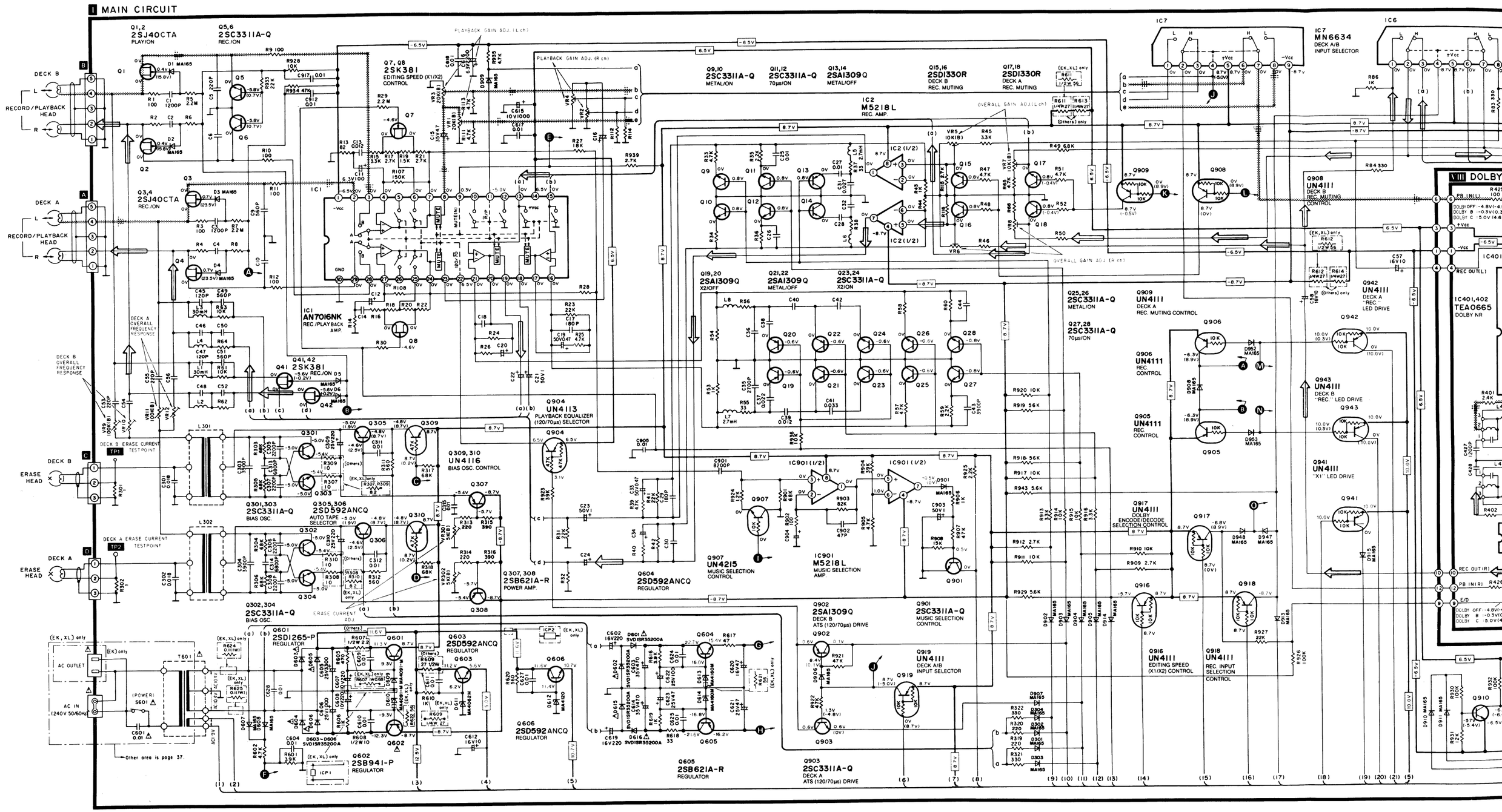


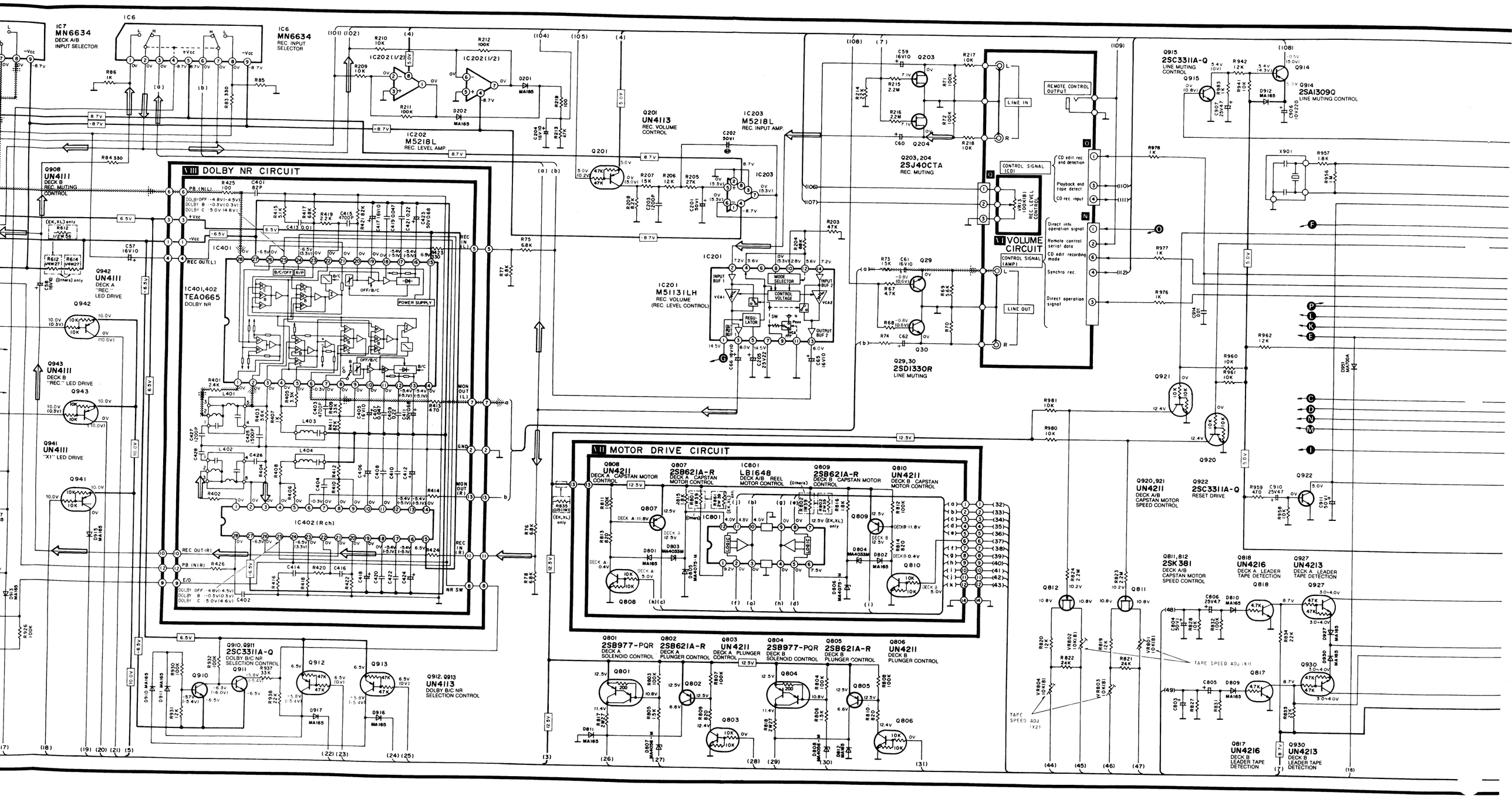
SW P.C.B.



1 2 3 4 5 6 7 8 9 10

I MAIN CIRCUIT


Q1,2 2SJ40CTA PLAY/ON
Q5,6 2SC3311A-Q REC./ON
Q7,08 2SK381 EDITING SPEED (X1/X2) CONTROL
Q9,10 2SC3311A-Q METAL/ON
Q11,12 2SC3311A-Q 70µs/ON
Q13,14 2SA1309Q METAL/OFF
Q15,16 2SD1330R DECK B REC. MUTING
Q17,18 2SD1330R DECK A REC. MUTING
IC2 M5218L REC. AMP.
IC7 MN6634 DECK A/B INPUT SELECTOR
Q3,4 2SJ40CTA REC./ON
IC1 AN7016NK REC./PLAYBACK AMP.
Q41,42 2SK381
Q19,20 2SA1309Q X2/OFF
Q21,22 2SA1309Q METAL/OFF
Q23,24 2SC3311A-Q X2/ON
Q25,26 2SC3311A-Q METAL/ON
Q27,28 2SC3311A-Q 70µs/ON
Q909 UN4111 DECK A REC. MUTING CONTROL
Q906 UN4111 REC. CONTROL
Q905 UN4111 REC. CONTROL
Q908 UN4111 DECK B REC. MUTING CONTROL
Q942 UN4111 DECK A "REC." LED DRIVE
Q943 UN4111 DECK B "REC." LED DRIVE
Q941 UN4111 "X1" LED DRIVE
Q917 UN4111 DOLBY ENCODE/DECODE SELECTION CONTROL
Q916 UN4111 EDITING SPEED (X1/X2) CONTROL
Q918 UN4111 REC. INPUT SELECTION CONTROL
Q904 UN4113 PLAYBACK EQUALIZER (120/70µs) SELECTOR
Q309,310 UN4116 BIAS OSC. CONTROL
Q907 UN4215 MUSIC SELECTION CONTROL
IC901 M5218L MUSIC SELECTION AMP.
Q901 2SC3311A-Q MUSIC SELECTION CONTROL
Q902 2SA1309Q DECK B ATS (120/70µs) DRIVE
Q903 2SC3311A-Q DECK A ATS (120/70µs) DRIVE
Q919 UN4111 DECK A/B INPUT SELECTOR
Q301,303 2SC3311A-Q BIAS OSC.
Q305,306 2SD592ANCQ AUTO TAPE SELECTOR
Q307,308 2SB621A-R POWER AMP.
Q604 2SD592ANCQ REGULATOR
Q302,304 2SC3311A-Q BIAS OSC.
Q601 2SD1265-P REGULATOR
Q603 2SD592ANCQ REGULATOR
Q606 2SD592ANCQ REGULATOR
Q602 2SB941-P REGULATOR
Q605 2SB621A-R REGULATOR
IC401,402 TEA0665 DOLBY NR
DECK B RECORD/PLAYBACK HEAD
DECK A RECORD/PLAYBACK HEAD
DECK B ERASE HEAD
DECK A ERASE HEAD
DECK B ERASE CURRENT TESTPOINT TP1
DECK A ERASE CURRENT TESTPOINT TP2
ERASE CURRENT ADJ.
DECK A OVERALL FREQUENCY RESPONSE
DECK B OVERALL FREQUENCY RESPONSE
PLAYBACK GAIN ADJ. (L ch)
PLAYBACK GAIN ADJ. (R ch)
OVERALL GAIN ADJ. (L ch)
OVERALL GAIN ADJ. (R ch)
AC IN (240V 50/60Hz)
AC OUTLET
(POWER) S601
T601
Other area is page 37.


IC7 MN6634 DECK A/B INPUT SELECTOR
IC6 MN6634 REC. INPUT SELECTOR
IC202 M5218L REC. LEVEL AMP.
IC202(1/2)
Q201 UN4113 REC. VOLUME CONTROL
IC203 M5218L REC. INPUT AMP.
Q203,204 2SJ40CTA REC. MUTING
Q915 2SC3311A-Q LINE MUTING CONTROL
Q914 2SA1309Q LINE MUTING CONTROL
VIII DOLBY NR CIRCUIT
IC401,402 TEA0665 DOLBY NR
Q908 UN4111 DECK B REC. MUTING CONTROL
Q942 UN4111 DECK A "REC." LED DRIVE
Q943 UN4111 DECK B "REC." LED DRIVE
Q941 UN4111 "X1" LED DRIVE
IC201 M51131LH REC. VOLUME (REC. LEVEL CONTROL)
VI VOLUME CIRCUIT
CONTROL SIGNAL (CD)
CONTROL SIGNAL (AMP)
REC. LEVEL CONTROL
LINE IN
LINE OUT
REMOTE CONTROL OUTPUT
Q29,30 2SD1330R LINE MUTING
Q910,911 2SC3311A-Q DOLBY B/C NR SELECTION CONTROL
Q912,913 UN4113 DOLBY B/C NR SELECTION CONTROL
VII MOTOR DRIVE CIRCUIT
Q808 UN4211 DECK A CAPSTAN MOTOR CONTROL
Q807 2SB621A-R DECK A CAPSTAN MOTOR CONTROL
IC801 LB1648 DECK A/B REEL MOTOR CONTROL
Q809 2SB621A-R DECK B CAPSTAN MOTOR CONTROL
Q810 UN4211 DECK B CAPSTAN MOTOR CONTROL
Q801 2SB977-PQR DECK A SOLENOID CONTROL
Q802 2SB621A-R DECK A PLUNGER CONTROL
Q803 UN4211 DECK A PLUNGER CONTROL
Q804 2SB977-PQR DECK B SOLENOID CONTROL
Q805 2SB621A-R DECK B PLUNGER CONTROL
Q806 UN4211 DECK B PLUNGER CONTROL
Q920,921 UN4211 DECK A/B CAPSTAN MOTOR SPEED CONTROL
Q922 2SC3311A-Q RESET DRIVE
Q811,812 2SK381 DECK A/B CAPSTAN MOTOR SPEED CONTROL
Q818 UN4216 DECK A LEADER TAPE DETECTION
Q927 UN4213 DECK A LEADER TAPE DETECTION
Q817 UN4216 DECK B LEADER TAPE DETECTION
Q930 UN4213 DECK B LEADER TAPE DETECTION
TAPE SPEED ADJ (X1)
TAPE SPEED ADJ (X2)

III/IV FL METER CIRCUIT

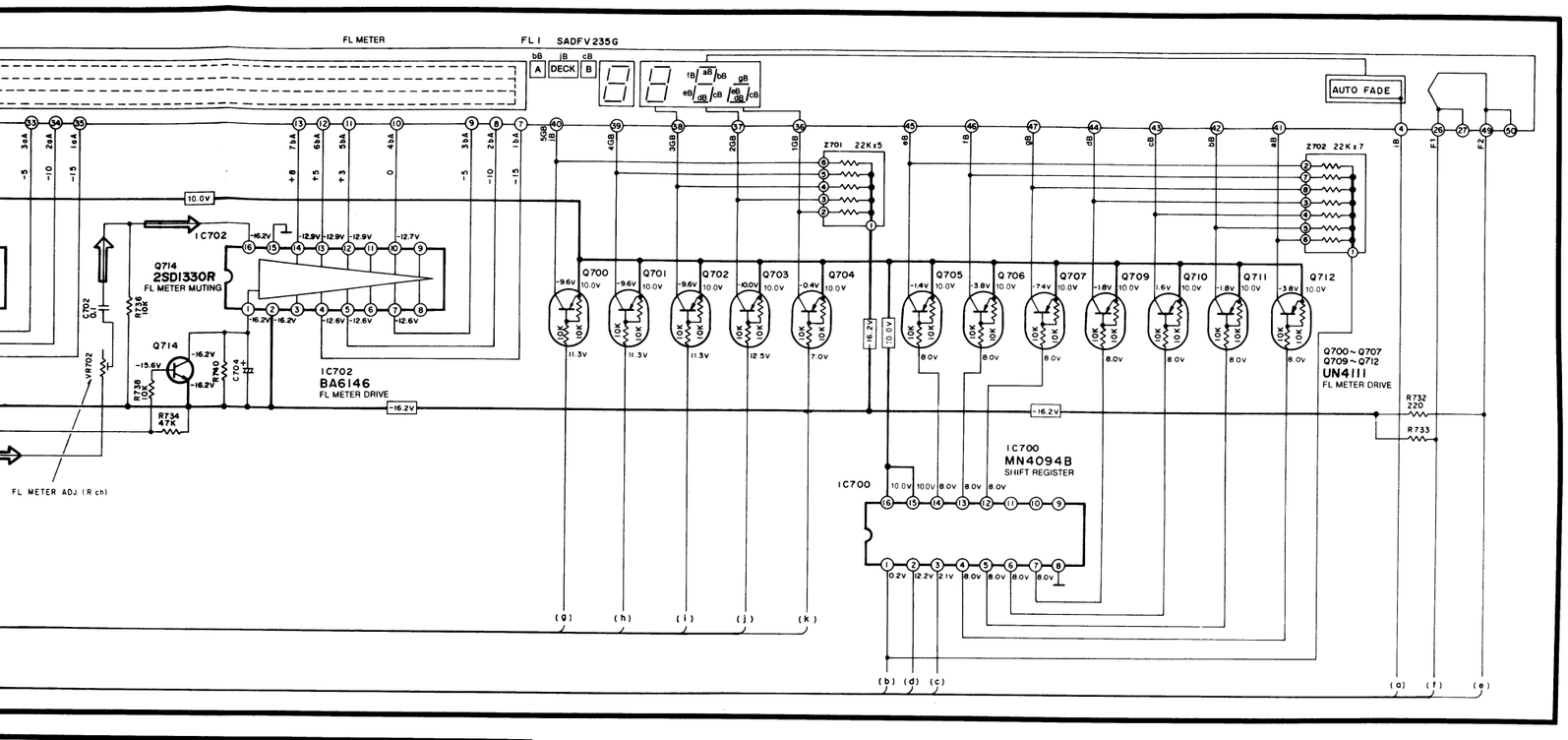
II OPERATION SW CIRCUIT

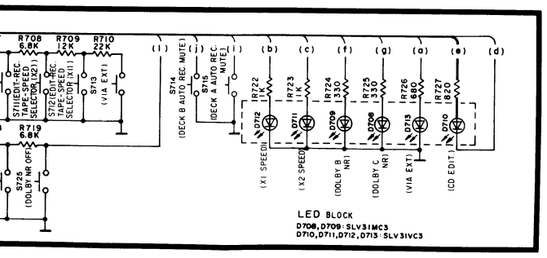
XI/XII/XIII MECHANISM CIRCUIT (DECK A) / SWITCH CIRCUIT (1)/(2)

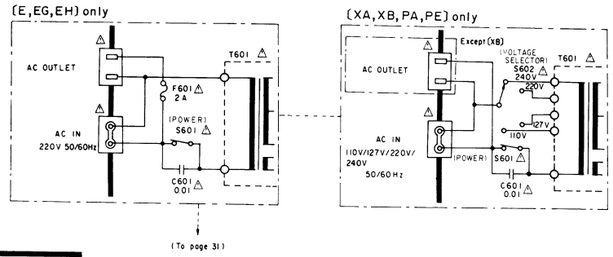
XI/XII/XIII MECHANISM CIRCUIT (DECK B) / SWITCH CIRCUIT (1)/(2)

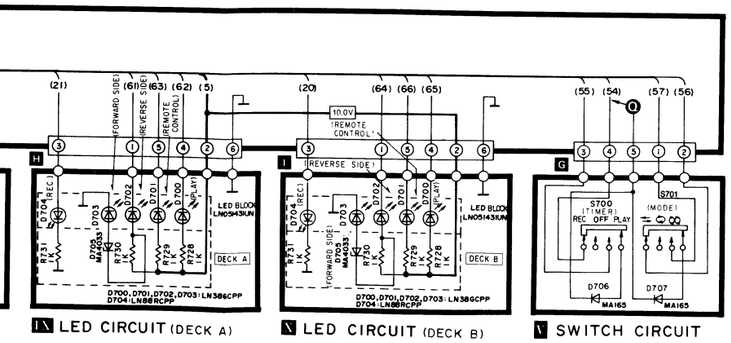
IX LED CIRCUIT (DECK A)

X LED CIRCUIT









■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- **S601** : Power switch in "**on**" position.
- **S700** : Timer start-by switch in "**off**" position.
- **S701** : Reverse mode selector in "**off**" position.
- **S702** : Deck A Stop switch in "**off**" position.
- **S703** : Deck A F.F./Rew. switch in "**off**" position.
- **S704** : Deck A Rew./F.F. switch in "**off**" position.
- **S705** : Deck A F. Playback switch in "**off**" position.
- **S706** : Deck A R. Playback switch in "**off**" position.
- **S707** : Deck A Rec. switch in "**off**" position.
- **S708** : Deck A Pause switch in "**off**" position.
- **S709** : Auto Fade switch in "**off**" position.
- **S710** : Synchro-start switch in "**off**" position.
- **S711** : Edit-rec. tape speed selector (X2) in "**off**" position.
- **S712** : Edit-rec. tape speed selector (X1) in "**off**" position.
- **S713** : VIA EXT switch in "**off**" position.
- **S714** : Deck B Auto rec. mute switch in "**off**" position.
- **S715** : Deck A Auto rec. mute switch in "**off**" position.
- **S716** : Deck B Stop switch in "**off**" position.
- **S717** : Deck B F.F./Rew. switch in "**off**" position.
- **S718** : Deck B Rew./F.F. switch in "**off**" position.
- **S719** : Deck B F. Playback switch in "**off**" position.
- **S720** : Deck B R. Playback switch in "**off**" position.
- **S721** : Deck B Rec. switch in "**off**" position.
- **S722** : Deck B Pause switch in "**off**" position.
- **S723** : Dolby C NR switch in "**off**" position.
- **S724** : Dolby B NR switch in "**off**" position.
- **S725** : Dolby NR OFF switch in "**off**" position.
- **S727** : Reset switch in "**off**" position.
- **S728** : Deck A/B tape counter display select switch in "**off**" position.
- **S1001** : Deck A ATS (Metal) switch in "**off**" position.
- **S1002** : Deck A ATS (120/70μs) switch in "**off**" position.
- **S1003** : Deck A F. Rec. inhibit switch in "**off**" position.
- **S1004** : Deck A R. Rec. inhibit switch in "**off**" position.
- **S1005** : Deck A Pack switch in "**off**" position.
- **S1006** : Deck A Direction detect switch in "**off**" position.
- **S1007** : Deck B ATS (Metal) switch in "**off**" position.
- **S1008** : Deck B ATS (120/70μs) switch in "**off**" position.
- **S1009** : Deck B F. Rec. inhibit switch in "**off**" position.
- **S1010** : Deck B R. Rec. inhibit switch in "**off**" position.
- **S1011** : Deck B Pack switch in "**off**" position.
- **S1012** : Deck B Direction detect switch in "**off**" position.

- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  ( ).....Voltage values at record mode.
  For measurement us EVM.

- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

- (± B) indicates ±B (bias).
- ( ) indicates the flow of the playback signal.
- ( ) indicates the flow of the record signal.

∗ Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

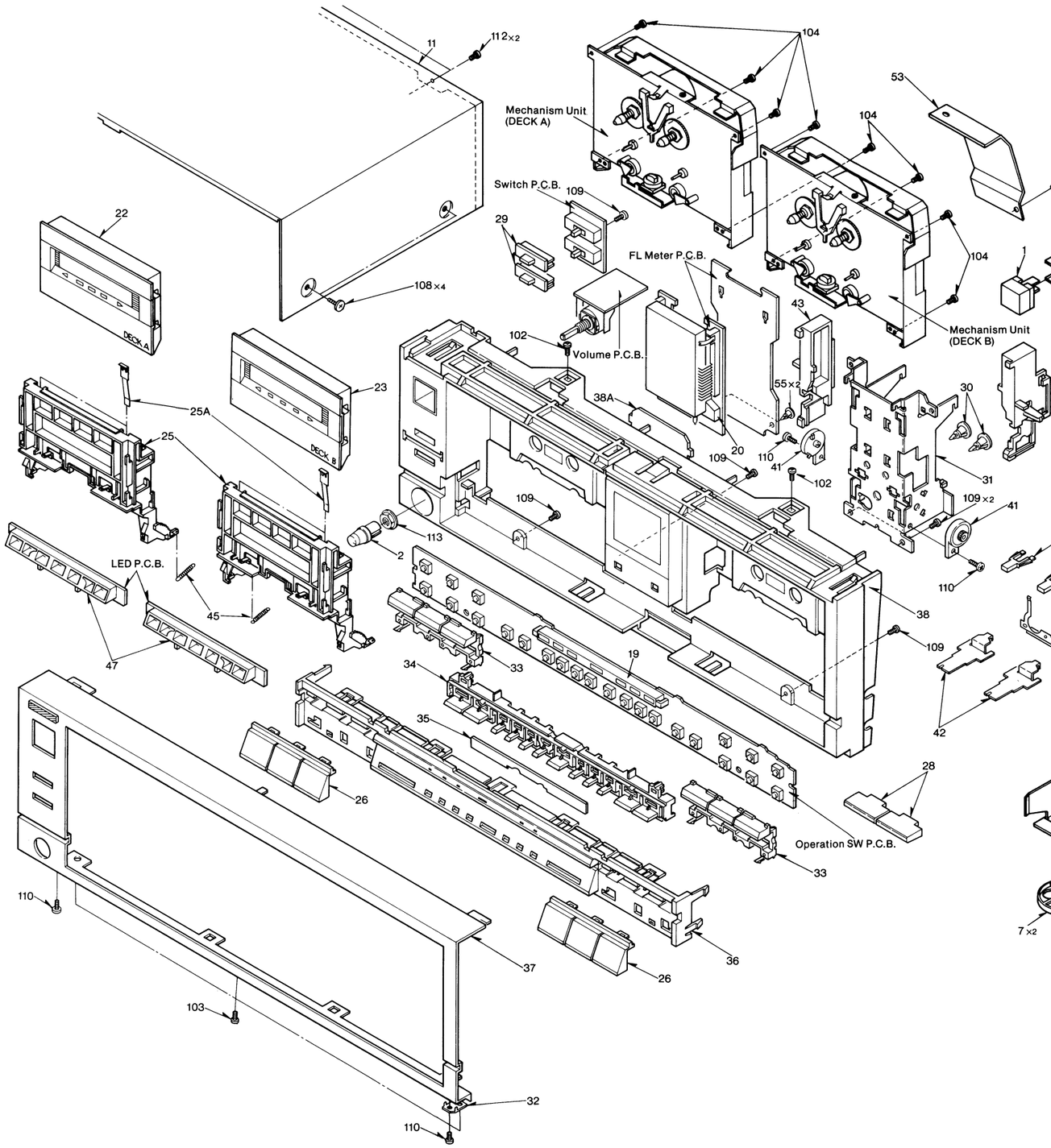
∗ Cover the parts boxes made of plastics with aluminum foil.
∗ Ground the soldering iron.
∗ Put a conductive mat on the work table.
∗ Do not touch the legs of IC or LSI with the fingers directly.

■ REPLACEMENT PARTS LIST

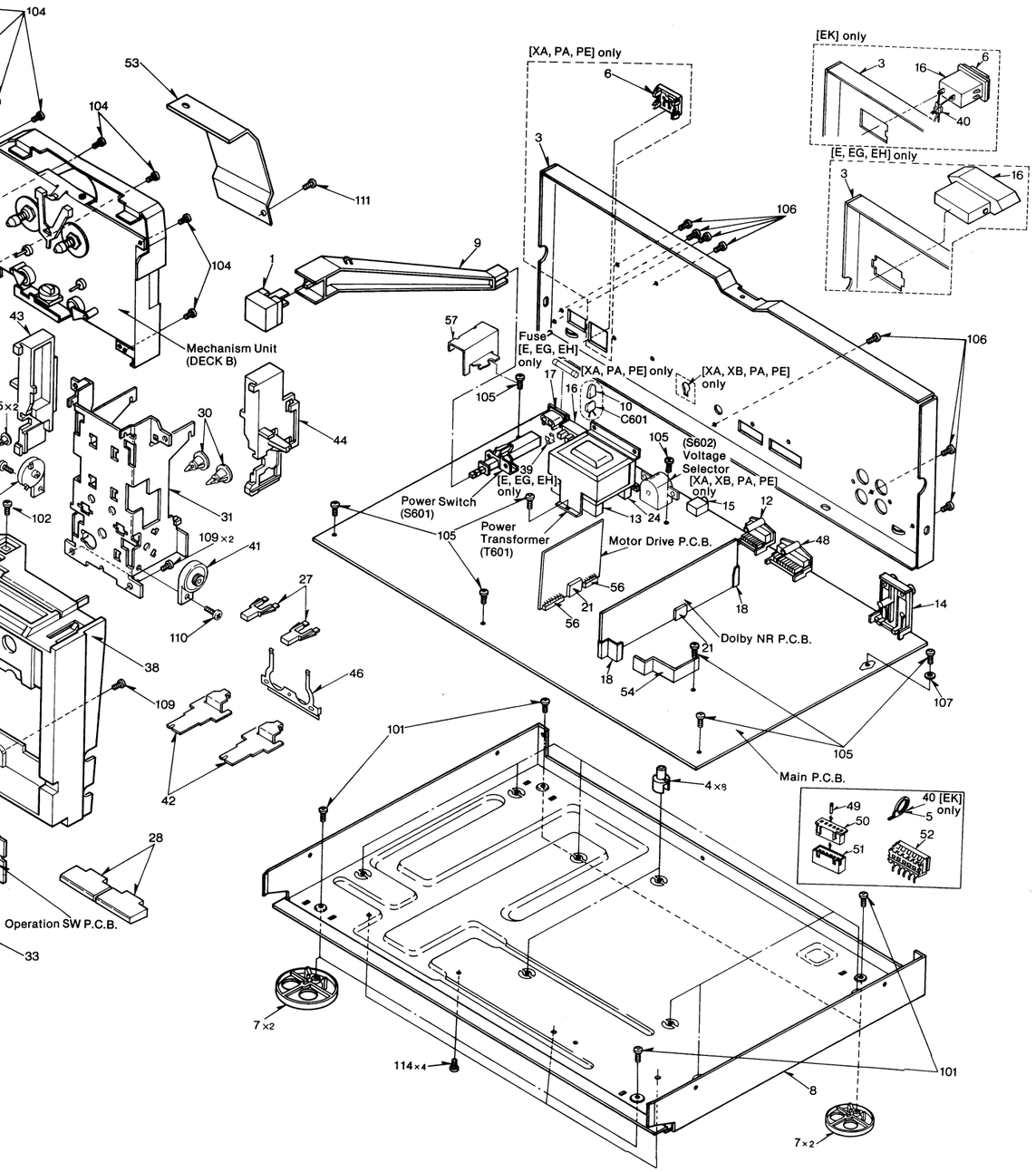
Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
1	SBC666-1	BUTTON, POWER
2	SBN1222	KNOB, REC LEVEL
3 (EG, EH)	SGP7060-16A	REAR PANEL
3 (E)	SGP7060-16B	REAR PANEL
3 (EK)	SGP7060-17A	REAR PANEL
3 (XA, PA, PE)	SGP7060-18A	REAR PANEL
3 (XL)	SGP7060-19A	REAR PANEL
3 (XB)	SGP7060-20A	REAR PANEL
4	SHE187-2	HOLDER
5	SHR301	CLAMPER
6 (XA, PA, PE)	SJS9330A	AC OUTLET COVER
6 (EK)	SJS9332A	AC OUTLET COVER
7	SKL307	FOOT
8	SKU11651-1	BOTTOM BOARD
9	SUB264-1	ROD
10	SMX897	COVER
11	SKC2070K16	CABINET
12	SJS402	SOCKET(4P)
13	SJS703	SOCKET(7P)
14	SJF3057N	TERMINAL BOARD
15	SJJ130-2	JACK(REMOTE)
16 ⚠ (E, EG, EH)	SJS9225	AC OUTLET
16 ⚠ (XA, PA, PE)	SJS9330B	AC OUTLET
16 ⚠ (EK)	SJS9332B	AC OUTLET
17 ⚠ (XL)	SJSD16	AC INLET
17 ⚠ (E, EK, EG, EH) (XA, XB, PA) (PE)	SJS9236	AC INLET
18	SME103-4	SHIELD PLATE
19	SWV98	LED BLOCK ASS'Y (D708--D713)
20	SHE231	PLASTIC SPACER
21	SMN2043	ANGLE
22	SGE1902	CASSETTE LID (DECK A)
23	SGE1902-1	CASSETTE LID (DECK B)
24 (E, EK, EG, EH) (XL)	SJS207	SOCKET(2P)
24 (XA, XB, PA) (PE)	SJS703	SOCKET(7P)
25	SGE1898-3	CASSETTE HOLDER
25A	QBP2006A	SPRING
26	SBC994-1	BUTTON, OPERATION , A
27	SBC997	BUTTON, COUNTER
28	SBC998	BUTTON, EJECT
29	SBD143	KNOB, SLIDE
30	SHR9847	LATCH
31	SMN2057	ANGLE
32	SMN2058	ANGLE
33	SBC995	BUTTON, OPERATION , B
34	SBC996	BUTTON, OPERATION , C
35	SGL253	ORNAMENT
36	SGX7938	ORNAMENT
37	SGWSX990-KE	FRONT PANEL ASS'Y
38	SGXSX990-KE	FRONT GRILL ASS'Y
38A	SGU581	FILTER
39 (E, EG, EH)	SJT390	FUSE HOLDER
40 (EK)	SHR301	CLAMPER
41	SMQSX840-KN	DAMPER GEAR ASS'Y
42	SUB271-1	EJECT ROD
43	SMQ40028-1	EJECT LEVER (L)
44	SMQ40029-1	EJECT LEVER (R)
45	SUS889	SPRING (CASSETTE HOLDER)
46	SUS872	BRACKET
47	LN051431UN	LED ASS'Y (D700--D704)
48	SJS804	SOCKET(8P)
49	SJT783	CONTACT
50	SJS5331	SOCKET(3P)
50	SJS5523	SOCKET(5P)
50	SJS5629	CONNECTOR(6P)
51	SJT3319	CONNECTOR(3P)
51	SJT3511	CONNECTOR(5P)
51	SJT3611	CONNECTOR(6P)
52	SJT30243-V	CONNECTOR(2P)
52	SJT30340LX-V	CONNECTOR(3P)
52	SJT30543-V	CONNECTOR(5P)
52	SJT30640LX-V	CONNECTOR(6P)
52	SJT30740LX-V	CONNECTOR(7P)
52	SJT30940LX-V	CONNECTOR(9P)
53	SMC6458	SHIELD COVER
54	SMC1282	SHIELD COVER
55	SHR9094	LATCH
56	SJT30739MB	CONNECTOR (7P)
57	SMN2088	BRACKET
SCREWS, WASHERS AND NUTS		
101	XTB3+8G	SCREW
102	XTB3+8FFR	SCREW
103	XTB3+8J	SCREW
104	XTB3+12JFR	SCREW
105	XTB3+20J	SCREW
106	XTBS3+8JFZ1	SCREW
107	XWA3B	WASHER
108	SNE2129-1	SCREW
109	XTB3+10J	SCREW
110	XTS3+8J	SCREW
111	XTN3+4F	SCREW
112	XTB3+8JFZ	SCREW
113	SNE4021-1	NUT
114	XTB3+8JFR	SCREW

■ CABINET PARTS LOCATION



| | | |


[XA, PA, PE] only
[EK] only
[E, EG, EH] only
Mechanism Unit (DECK B)
Fuse [E, EG, EH] only
[XA, PA, PE] only
[XA, XB, PA, PE] only
C601
(S602) Voltage Selector
[XA, XB, PA, PE] only
[E, EG, EH] only
Power Switch (S601)
Power Transformer (T601)
Motor Drive P.C.B.
Dolby NR P.C.B.
Main P.C.B.
Operation SW P.C.B.
4×8
7×2
114×4
109×2

| | | |

ORDER NO. HAD8804127C9-A

Cassette Deck

RS-X990

DEUTSCH

MESSUNGEN UND EINSTELL METHODEN

Meßinstrumente

- Elektronisches Voltmeter (EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Tonkopf-Azimuteinstellung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8kHz, −20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajosscghe wellenfigur sich, wie abgebildet, 0 Grad nähert.

Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

Prüfung des Pegelunterschiedes bei Vorwärts- und Rückwärtsdrehung

3. Den Abschnitt für Verstärkungseinstellung (315Hz, 0dB) des Prüfbandes (QZZCFM) wiedergeben und sicherstellen, daß der Pegelunterschied bei Vorwärts- und Rückwärtsdrehung kleiner als 1dB ist.
4. Nach der Einstellung Schrauben-Sicherungsmittel an die Azimuth-Einstellschraube geben.

Bandgeschwindigkeits-einstellung

Hohe Geschwindigkeit

1. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "**X2**" stellen.
2. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
3. Deck B=**VR804** und Deck A=**VR803** so einstellen, daß der Ausgang dem Sollwert entspricht.

Normale Geschwindigkeit

4. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "**X1**" stellen.
5. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
6. Deck B=**VR802** und Deck A=**VR801** so einstellen, daß der Ausgang dem Sollwert entspricht.

Einstellung der Wiedergabeverstärkungsregelung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315Hz, 0dB) ab.
2. Stellen Sie **VR1** (L-K) [[**VR2** (R-K)]] für Deck B uon **VR3** (L-K) [[**VR4** (R-K)]] für Deck A so ein, daß die Abgabe den Normwert erfüllt.

Wiedergabefrequenzaang

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, −20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in **Abb. 6** gezeigten Bereich liegt.

D

Löschstromeinstellung (Deck A/B)

1. Die leere Metallband-Prüfkassette (QZZCRZ) einsetzen und das Gerät auf Aufnahmepause schalten.
2. Deck B=**VR301** und Deck A=**VR302** so einstellen, daß der Ausgang zwischen Deck B=**TP1** und GND, Deck A=**TP2** und GND dem Sollwert entspricht.

Gesamtfrequenzgang

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkeregler ein Bezugseingabesignal (1kHz, −24dB) ein.
3. Stellen Sie das Signal auf 20dB und justieren die Frequenz von 50Hz~10kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bazugsfrequenz (1kHz) in dem in **Abb. 9** aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie Deck B=**VR9** (L-K) und **VR10** (R-K), Deck A=**VR11** (L-K) und **VR12** (R-K) so, daß der Frequenzpegel mit der Norm übereinstimmt.
7. Wiederholen Sie die Schritte 2~6 und verwender das CrO_2 Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 12.5kHz (50Hz~12.5kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in **Abb. 10** aufgezeigten Bereich befindet.

Einstellung der Gesamtverstärkungsregelung

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Betrieb.
2. Legen Sie ein Bezugseingabesignal (1kHz, −24dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie Deck B=**VR5** (L-K) und **VR6** (R-K), Deck A=**VR7** (L-K) und **VR8** (R-K).
6. Wiederholen Sie die Schritte 2~5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

Fluoreszenzanzeigeneinstellung

1. Legen Sie das normale Leertestband (QZZCRA) ein und geben bei Aufnahme-/Pause-Betrieb ein Bezugseingabesignal (1kHz, −24dB) ein.
2. Verwenden Sie einen Lautstärkeregler und stellen Sie diesen so ein, daß an den "LINE OUT"-Anschlüssen des Kassettendecks 0.4V anliegen.
3. Justieren Sie **VR701** (L-K) und **VR702** (R-K) so, daß der "-0dB" -Abschnitt der Anzeige schwach auflenuchtet.

D

FRANÇAIS

METHODES DES MEASURES ET REGLAGES

Appareils de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T. (Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Reglage Azimutal de la tete

1. Faire jouer la portion du réglage de l'azimuth (8kHz, −20dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimutale jusqu'à de que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximiséset égaux.

2. Effectuer le même r&e 19 mglage sur le mode d'audition.

Vérification de la différence de niveau pour les deux sens de rotation

3. Introduire une bande métal vierge prévue pour les essais (QZZCPZ) et vérifier que la différence de niveau pour lés déux sens de rotation est inférieure à 1dB.
4. Après cela, mettre une goutte de vernis de blocage sur la vis de réglage de l'azimut.

Réglage de la vitesse de défilement Vitesse

Grande vitesse

1. Placer le sélecteur de vitesse d'édition sur la position "**X2**".
2. Lire la partie centrale de la bande d'essai (QZZCWAT).
3. Régler la platine B: **VR804** et la platine A: **VR803** pour la platine B de manière que la sortie ait la valeur standard.

normal

4. Placer le sélecteur de vitesse d'édition sur la position "**X1**".
5. Lire la partie centrale de la bande d'essai (QZZCWAT).
6. Régler **VR802** pour la platine B et **VR801** pour la platine A de manière que la sortie ait la valeur standard.

Reglage de L'amplification de Lecture

1. Faire jouer la partie réglée de l'amplification (315Hz, 0dB) de la bande d'essai (QZZCFM).
2. Régler la platine B: **VR1** (canal de gauche) **[[VR2** (canal de droite)]] et la platine A: **VR3** (canal de gauche) **[[VR4** (canal de droite)]] de telle sorte que la sortie soit en deçà de la valeur standard.

Reponse en Frequence de la Lecture

1. Faier jouer la partie de la réponse en fréquence (315Hz, 12.5kHz, −63Hz, −20dB) de la bande d'essai (QZZCFM).
2. S'assurer que la réponse en fréquence soit en deçà de la plage montrée dans la **Fig. 6**, à la fois pour le canal de gauche et le canal de droite.

Réglage du courant d'effacement (Platine A/B)

1. Introduire une bande métal vierge prévue pour les essais (QZZCRZ) et régler l'appareil en mode de pause d'enregistrement.
2. Régler la platine B: **VR301** et la platine A: **VR302** de maniére que la sortie entre la platine B: **TP1** et GND, la platine A: **TP2** et GND ait la valeur standard.

Reponse en Frequence Totale

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1kHz, −24dB) par l'intermédiaire d'un atténuateur.
3. Diminuer le signal de 20dB et régler la fréquence de 50Hz~10kHz.
4. Enregistrer le balayage de fréquence.
5. Faire jouer le signal enregistré et s'assurer qu'il soit en deçà de la plage montrée à la **Fig. 9** en comparaison à la fréquence de référence (1kHz).
6. S'Il n'est pas en deçá de la plage standard, régler la platine B: **VR9** (canal de gauche) et **VR10** (canal de droite), la platine A: **VR11** (canal de gauche) et **VR12** (canal de droite) de telle sorte que le niveau de fréquence soit en deçá de la plage standard.
7. Répéter les étapes 2~6 ci-dessus en utilisant la band CrO_2 (QZZCRX) et la bande métallisée (QZZCRX) en augmentant la plage de fréquence à 12.5kHz (50Hz~12.5kHz).
8. S'assurer que le niveau soit en deçà de la plage montrée à la **Fig. 10.**

Reglage de L'amplification Totale

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1kHz, −24dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4V.
3. Enregistrer ce signal d'entrée.
4. Faire jouer le signal enregistré à l'étape 3 ci-dessus, et s'assurer que la sortie en deçà de la valeur standard.
5. Si elle n'est pas en deçá de la valeur standard, régler la platine B: **VR5** (canal de gauche) et **VR6** (canal de droite), la platine A: **VR7** (canal de gauche) et **VR8** (canal de droite).
6. Répéter les étapes 2~5 ci-dessus jusqu'à ce que la sortie soit en deçà de la valeur standard.

Reglage du Mesureur Fluorescent

1. Introduire la bande d'essai vierge normale (QZZCRA) et appliquer un signal d'entrée de référence (1kHz, −24dB) sur le mode d'intermission d'un disque.
2. En utilisant un atténuateur, le régler jusqu'à ce que la tension des bornes "LINE OUT" (sortie de ligne) des platines de magnétophones soit de 0.4V.
3. Régler **VR701** (canal de gauche) et **VR702** (canal de droite) de telle sorte que le segment "0dB" soit légèrement éclairé.

D

ESPAÑOL

METODOS DE AJUSTE Y MEDIDA

Instrumento de medición

- EVM (Voltimetro electrónico)
- Osciloscopio
- Frecuencimetro digital
- Oscilador AF
- ATT (Atenuador)
- Voltimetro CC
- Resistor (600Ω)

Ajuste Azimutal de Cabeza

1. Reproducir la porción de ajuste azimutal (8kHz, −20dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y forma de onda de lissajous, como ilustrado, se acerque a grado 0.

Nota:

Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.

2. Efectuar el mismo ajuste en la modalidad de reproducción.

Comprobación de la diferencia de nivel de giro hacia adelante y hacia atrás

3. Reproduzca la parte del adjuste de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM) y luego asegúrese de que la diferencia de nivel de giro hacia adelante y hacia atrás sea menor que 1dB.
4. Dcspués del ajustc, aplique pintura de fijación al tornillo de ajuste del azimut.

Ajuste de la Velocidad de la Cinta

Alta velocidad

1. Lleve a "**X2**" el selector de la velocidad de la cinta de edición.
2. Reproduzca la sección central de la cinta de prueba (QZZCWAT).
3. Ajuste la platina B=**VR804** y la platina A=**VR803** de modo que la salida quede comprendida dentro de los valores estándares.

Velocidad normal

4. Lleve a "**X1**" el selector de la velocidad de la cinta de edición.
5. Reproduzca la sección central de la cinta de prueba (QZZCWAT).
6. Ajuste la platina B=**VR802** y la platina A=**VR801** de modo que la salida quede comprendida dentro de los valores estándares.

Ajuste de Ganancia de Reproduccion

1. Reproducir la porción ajustada de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM).
2. Ajustar la Platina B: **VR1** (CH-I) [[**VR2** (CH-D)]] y la Platina A: **VR3** (CH-I) [[**VR4** (CH-D)]] de manera que la salida esté dentro del valor estándar.

Respuesta de Frecuencia de Reproduccion

1. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz, −20dB) de la cinta de prueba (QZZCFM).
2. Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la **Fig. 6** para ambos CH-I y CH-D.

Ajuste de la Corriente de Borrado (Platina A/B)

1. Inserte la cinta de prueba metálica en blanco (QZZCRZ) y ponga el aparato en la modalidad de pausa de grabación.
2. Ajustar la platina B: **VR301** y la platina A: **VR302** de modo que la salida entre la platina B: **TP1** y GND, la platina A: **TP2** y GND esté dento de los valores estándares.

Respuesta de Frecuencia Total

1. Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1 kHz, −24 dB) a través de un atenuador.
3. Atenuar la señal por 20dB y ajustar la frecuencia de 50 Hz~10 kHz.
4. Grabar el barrido de frecuencia.
5. Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la **Fig. 9** en comparación con la frecuencia de referencia (1 kHz).
6. Si no está dentro de la gama de frecuencia, ajustar la platina B: **VR9** (CH-I) y **VR10** (CH-D), la platina A: **VR11** (CH-I) y **VR12** (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
7. Repetir los pasos 2~6 de arriba utilizando la cinta CrO_2 (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 12.5 kHz (50 Hz~12.5 kHz).
8. Asegurarse de que el nivel est&e 19mdentro de la gama mostrada en la **Fig. 10.**

Ajuste de Ganancia Total

1. Insertar la cinta de prueba en blance normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1 kHz, −24 dB). Atenuar la salida de manera que su nivel se haga 0.4 V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salide esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar **VR5** (CH-I) y **VR6** (CH-D).
5. Si no está dentro del valor estándar, ajustar la platina B: **VR5** (CH-I) y **VR6** (CH-D), la platina A: **VR7** (CH-I) y **VR8** (CH-D).
6. Repetir el paso 2~5 de arriba hasta que la salida esté dentro del valor estándar.

Ajuste de Medidor de Fluorescente

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y aplicar una señal de entrada de referencia (1 kHz, −24 dB) en la modalidad de Pausa de Grabación.
2. Utilizando un atenuador, ajustarlo hasta que la tensión de los terminales "LINE OUT" (salida de linea) de las platinas de cinta sea 0.4 V.
3. Ajustar **VR701** (CH-I) y **VR702** (CH-D) de manera que el segmento "0dB" esté ligeramente iluminado.

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